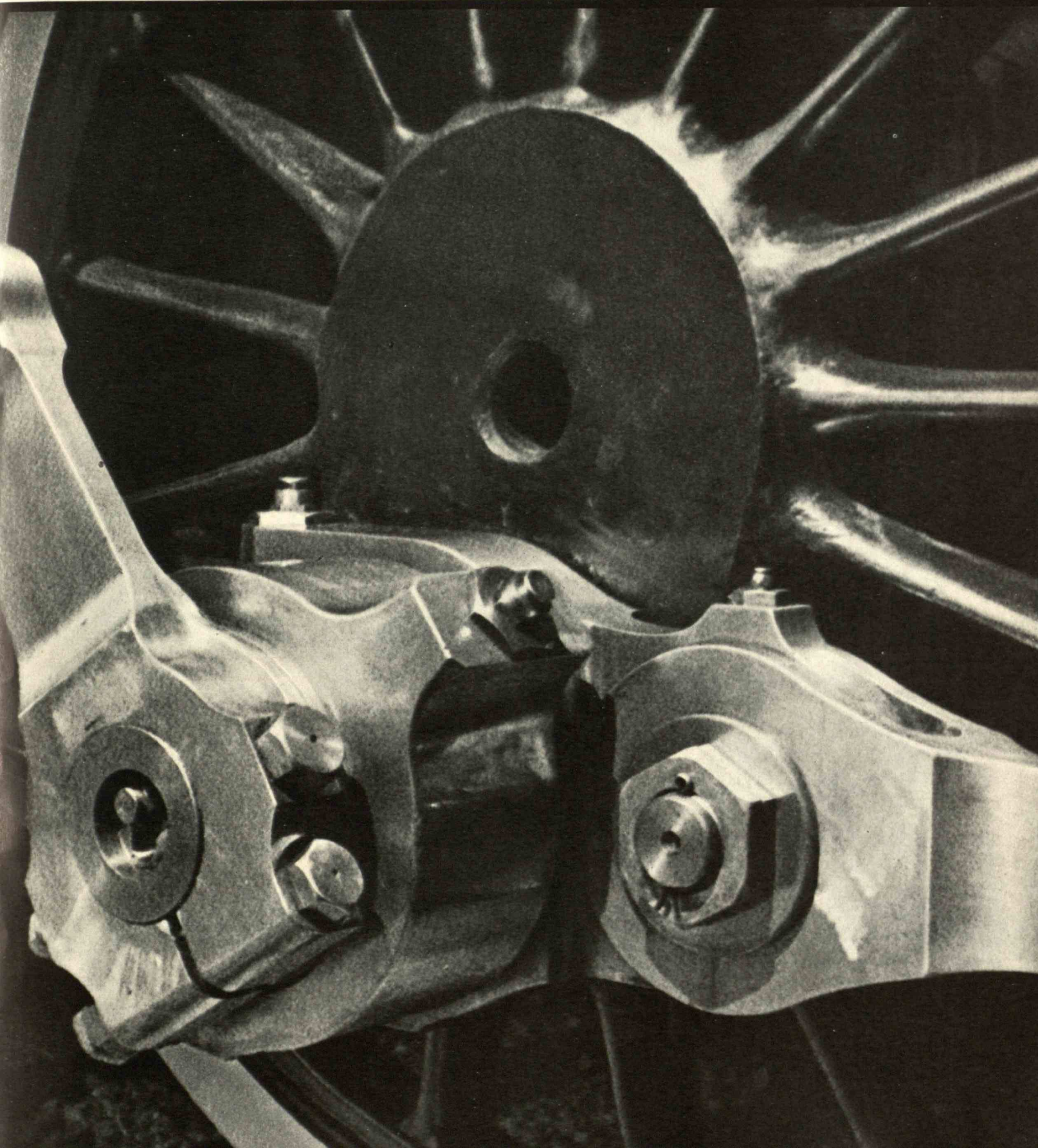


*November 1935*

# TECHNOLOGY

## REVIEW

Title Reg. in U. S. Pat. Office



# technology review

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From 1900 up to 1934 the leaf tobacco used for cigarettes increased from

13,084,037 lbs. to  
326,093,357 lbs.;  
an increase of 2392%

*There is no substitute  
for mild, ripe tobacco.*

During the year ending June 30, 1900, the Government collected from cigarette taxes

\$3,969,191

For the year ending June 30, 1934, the same taxes were

\$350,299,442

an increase of 8725%

*—a lot of money.*

*Cigarettes give a lot of  
pleasure to a lot of people.*



*More cigarettes are smoked today because  
more people know about them—they are better advertised.*

But the main reason for the increase is that they are made better—made of better tobaccos; then again the tobaccos are blended—a blend of Domestic and Turkish tobaccos.

*Chesterfield is made of mild, ripe tobaccos.*

*Everything that science knows about is used in  
making it a milder and better-tasting cigarette.*

*We believe you will enjoy them.*

© 1935, LIGGETT & MYERS TOBACCO CO.



## THE TABULAR VIEW

**P**ROFESSOR D. C. JACKSON, a former President of the American Institute of Electrical Engineers and for many years Head of the Department of Electrical Engineering at the Institute, is now in Japan, for the purpose of delivering a series of lectures under the auspices of the Iwadare Foundation by invitation of the Institute of Electrical Engineers of that country. He continues as a special lecturer and Professor Emeritus at Technology.

**A** YACHTSMAN and navigator by avocation only, R. D. FAY, '17, is Associate Professor of Electrical Communications here at the M.I.T. When Professor Fay received a hurried call this past summer to sail at once for England to take over the duties of navigator on the *Yankee*, he was confronted with a sartorial dilemma. Having always felt that he could sail a boat as well in dungarees as in gold braid, he realized, nevertheless, that to abide by the best tradition of the Cowes regatta, he should obtain a uniform. The Nahant Dory Club, of which he is a member, was, therefore, called upon in great haste to select and authorize an outfit that would be appropriate. This incident recalls another of Professor Fay's encounters with Dame Fashion, on the occasion of the last America's Cup trial races. Professor Fay threw Newport's nose violently out of joint when he appeared in "nautical trousers," about the color, as a Boston newspaper put it, "of the State House brick, and made of duck." "I bought these on the Mediterranean," explained Professor Fay, ensconced in said pants. "They are a Breton fisherman's outfit. I was looking for a blue pair, and this is what happened. Last summer I wore them in a race up at North Haven, Maine; and the boat, which had never won a race, came in first. I decided right then and there that these were racing pants." ¶ The Science Advisory Board, of which President KARL T. COMPTON is Chairman, is issuing this fall its second report on the relations of science to the activities of the Federal Government. Dr. Compton's article on page 57 is drawn from his annual report to the Technology Corporation.

**T**HE book review on page 50 was contributed by FREDERICK G. FASSETT, JR., Assistant Professor of English at the Institute. Professor Fassett teaches an option of freshman English which offers men on the staffs of undergraduate publications at M.I.T. an opportunity to study the technique of newspaper and magazine journalism. As a result of this course, the quality of undergraduate publications has notably improved. ¶ The Review acknowledges the helpful assistance of Professor JOSEPH H. KEENAN, '22, of the Department of Mechanical Engineering in the preparation of the article (page 43) on the competition between steam and Diesel power. ¶ Beginning with this issue, The Review, as a result of a donation covering the cost, goes to some 500 teachers of science throughout the country. The Editors would appreciate any suggestions these teachers may have for making The Review more useful to them.



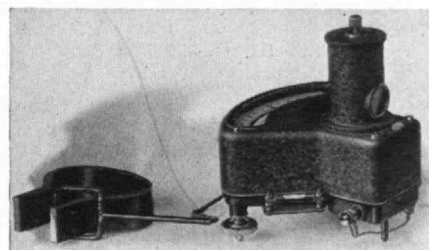
The first issue of the

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contains a description of our unusual Guaranteed Research service; the second is a report on one of our engineering developments. We shall be glad to send you copies on request.

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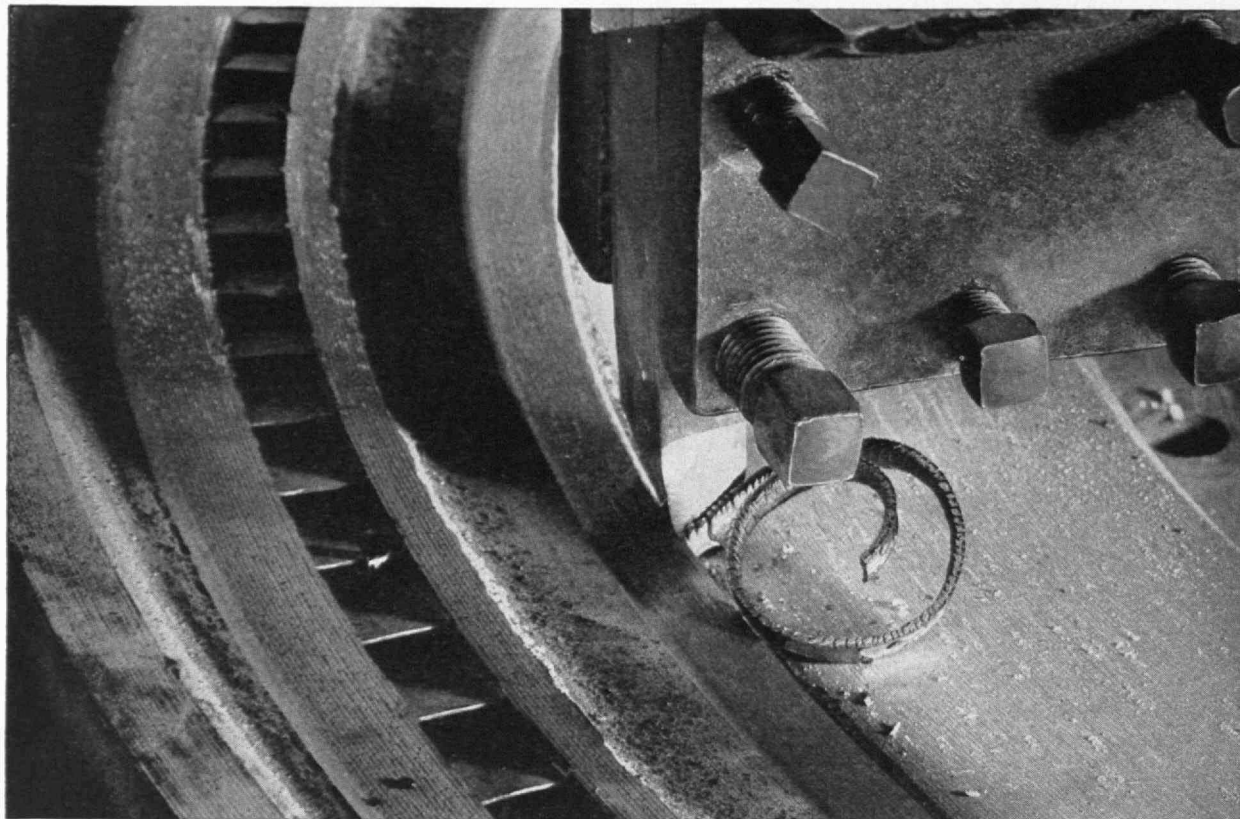
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## FROM STONE TO STEEL

THOUSANDS of years ago, a skin-clad workman pounded away with a cobblestone on a slab of hard rock. In a few years, that slab might be passably square and smooth.

Today, busy machines, supervised by trained workmen, pare off crisp, curling ribbons from whirling blocks of steel, as one would unwind ribbon from a spool, shaping the metal to a thousand purposes—to an accuracy within a few ten-thousandths of an inch.

CARBOLOY—a modern tool material developed by General Electric research—has made possible this speed, this precision. It cuts materials hitherto unworkable—cuts faster and holds its edge longer than steel tools—can be run at red heat without losing its temper.

CARBOLOY is only one of the contributions made to improved industrial processes by G-E research—research that has saved the public from ten to one hundred dollars for every dollar earned for General Electric.

96-188DH

**GENERAL**  **ELECTRIC**



# DEPARTMENT STORE IMPROVES HEATING BY MODERNIZATION

Daytons, Minneapolis, Uses  
Webster Moderator System  
To Control Temperatures

## HEATING PROBLEM SOLVED

Modernization Equally As  
Effective in Scores of  
Similar Buildings

## REMOVES OLD COMPLAINTS

Minneapolis, Minn.—The Dayton Department Store—one of the largest retail stores in the entire northwest is securing remarkably improved heating service as the result of a Webster Heating Modernization Program carried out in the fall of 1931.

For four years, through some of the coldest winters in Minnesota history, the Webster Moderator System has given the Dayton Store complete "Control-by-the-Weather."

Modernization of the Dayton Company buildings, which consisted in changing the mixed vacuum and gravity system to full vacuum operation, was completed without interrupting store operations.

The buildings vary from three to ten stories in height and have a total floor space of 500,000 square feet. Installation of the Webster Moderator System was made by the Belden-Porter Company, Minneapolis heating contractors.

Frequently, under the old system, certain portions of the store were underheated while others were too hot.

Since the application of modern central heating control to the Dayton Company buildings, temperature readings taken from a central location four times daily indicate that all store zones are perfectly heated even during the severest weather. Following is the record of a typical day, indicating how various departments are kept at the temperatures desired:

Temperature Record, Nov. 6, 1933

Floor	Dept.	10 a.m.	11 a.m.	12 M.	1 p.m.
Base.	Suits	68	69	70	70
Base.	Hardware	74	74	75	75
Main	Gloves	67	68	69	69
Main	Dress Goods	75	75	76	76
2nd	Infants	66	68	69	70
2nd	China	72	73	74	74
3rd	Dresses	68	69	70	70
4th	Vietrolas	67	67	68	68
5th	Rugs	66	67	67	68
6th	Furniture	63	65	65	66
7th	Buyers' Office	75	76	76	76
	Outside	34	35	35	33

In a department store, well-balanced heating keeps merchandise in first-class condition and is a source of satisfaction to employees and customers.

Webster Heating Modernization has been equally effective in scores of other department store installations, among them the Donaldson Store, also in Minneapolis, with the Hineline Company acting as modernization heating contractors; the Golden Rule Store, in St. Paul, where the Frank Eha Heating Company made the installation; and the L. S. Ayres Department Store, in Indianapolis, with Hayes Brothers making the installation.

If you are interested in (1) improved heating service and (2) lower heating cost in your building, address

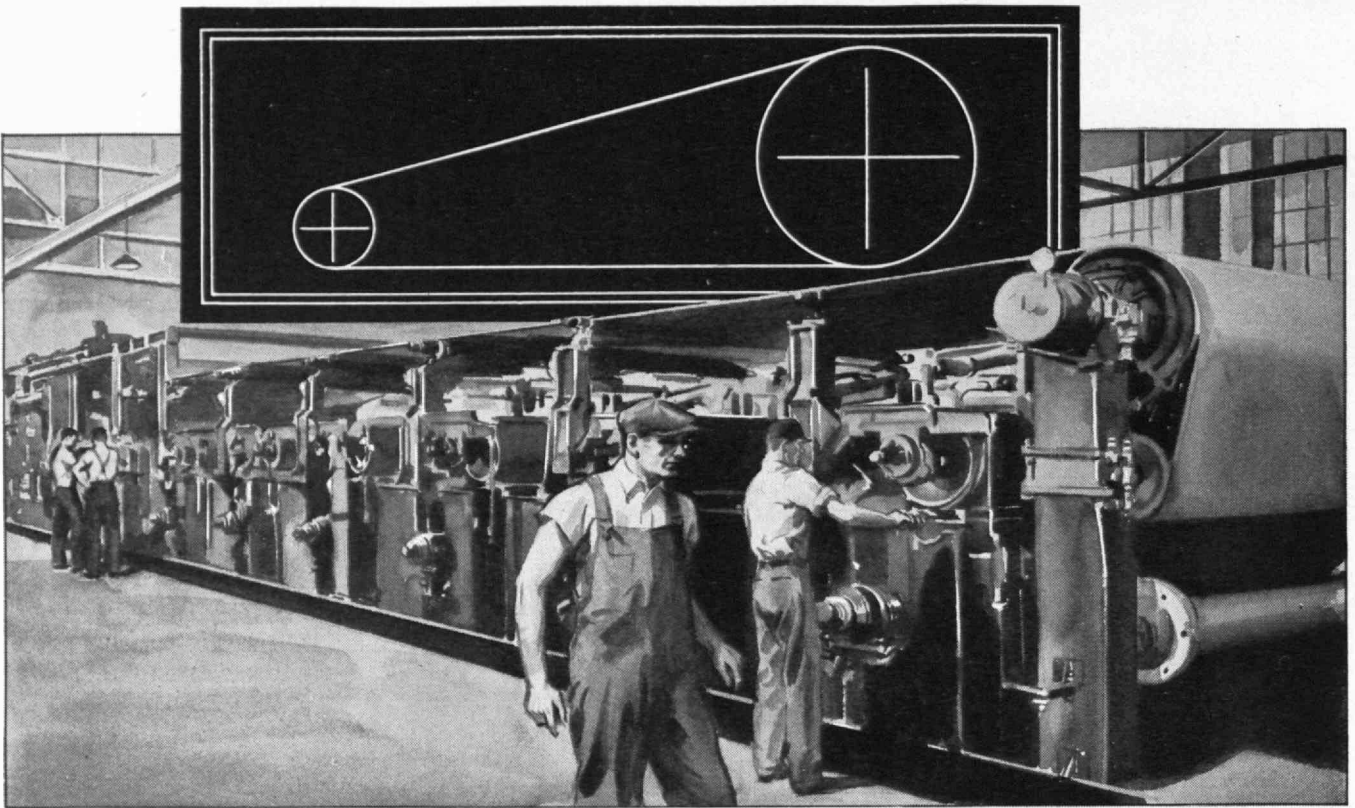
WARREN WEBSTER & CO., Camden, N. J.  
Pioneers of the Vacuum System of Steam Heating  
Branches in 60 principal U. S. Cities—Estab. 1888

IMPROVED  
**Webster**  
Systems of  
Steam Heating





# NEVER OFF PULLEYS IN THREE YEARS



## Goodyear COMPASS (Cord) Endless Belt eliminates costly breaks on paper machine

**P**APER making is one business where nobody wants to get the "breaks." A break in the sheet going through the paper machine means a costly delay and wasted paper.

In 1932 that was the difficulty in a large eastern mill. Belt trouble was causing frequent breaks on No. 3 paper machine, despite the expenditure of considerable money to keep this particular belt in repair.

Then the G. T. M. — Goodyear Technical Man — arrived on the scene. He analyzed the set-up with his practical knowledge of belting requirements and specified a 24" Goodyear COMPASS "40" Endless Belt for this 200-horsepower drive.

The COMPASS cost only one-third as much as the belt it replaced — in fact, its price was just about what had been spent in repairing the other.

### Has not stretched an inch

Installed in March 1932, this belt has never been off the pulleys. It has not even been necessary to touch the take-ups since the original adjustment for tension — and the belt shows no signs of wear!

But most important of all, COMPASS' smooth, speed-holding performance has greatly reduced the number of breaks in the sheet — *saving more than the belt's entire cost!*

Money-saving performance like this is typical of all Goodyear

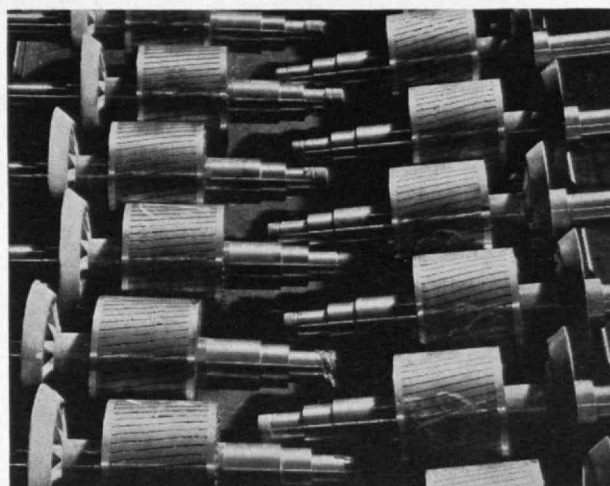
Mechanical Rubber Goods because they are correctly designed for their job and correctly specified to it by the G.T.M. Let this qualified expert help you. A line to Goodyear, Akron, Ohio, or Los Angeles, California, or the nearest Goodyear Mechanical Rubber Goods Distributor, will bring him.

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MOLDED GOODS  
HOSE  
PACKING**

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GOODYEAR TIRES

THE GREATEST NAME IN RUBBER

**GOOD YEAR**



Small induction motor rotors

Ewing Galloway

# THE TECHNOLOGY REVIEW

Title Reg. U. S. Pat. Office

EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

VOL. 38, NO. 2

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NOVEMBER, 1935

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From a photograph by John P. Mudd for The Midvale Company

## Milling Grooves

### "Tools of Tomorrow"

**M**ACHINE tools create other machines and are the only machines that reproduce themselves. Their importance is, therefore, fundamental to our machine economy, and their improvement and rate of production offers an index to industrial prosperity. Last July, machine-tool production returned to the 1926 level, indicating increased manufacture of other types of machines, and last September the Machine-Tool Show in Cleveland revealed striking progress in machine-tool design.

In the past two years the broaching machine has become a mass-production unit of primary importance, completely revolutionizing many machining operations. One manufacturer has presented a group of eight basic units fundamental to all machine tools and shown how these units can be assembled in different combinations to form a series of machines. This achievement in flexibility is symptomatic of a wide trend away from highly specialized single-purpose tools.

"Mult-au-matic" machines capable of performing desired operations on many parts simultaneously are reducing manual feed and individual attention. "It is safe to say," wrote R. E. W. Harrison, chief of the Machinery Division of the Department of Commerce in the

September issue of *Machine Design*, "that the mass production scheme of the future envisages the uses of a conveyor which will be nothing less than a series of jigs coupled together and indexed from machine element to machine element, the operations on the machine being automatically timed."

Mr. Harrison also foresees the use of the photoelectric cell in machining work, thus giving eyes to tools hitherto blind. Already, electrical and hydraulic controls have added to their dexterity, and new cutting alloys, such as the cemented carbides, to their speed. "Looking ahead," says Mr. Harrison, "we may expect to see heavier and more powerful tools with air-blast and coolant facilities so provided that limitations imposed by heat and friction will be removed . . . and last, but not least, the provision of automatic chip disposal facilities which will remove once and for all this hitherto serious limitation."

Truly, "we have only begun," as J. N. Leonard wrote in his beguiling "Tools of Tomorrow," "to explore the possibilities of machines. They have not yet approached their limits of efficiency or usefulness. . . . Fully automatic machines are the next step upward. They do not need to be fed, or started, or stopped."

# THE TECHNOLOGY REVIEW

Vol. 38, No. 2



November, 1935

## The Trend of Affairs

### *Steam vs. Diesel—With Notes on a New Steam Generator*

AT the jubilee meeting of the British Association for the Advancement of Science in 1881, Sir Frederick Bramwell, then the *Pontifex Maximus* of the engineering world, delivered himself of this now famous forecast:

I believe the way in which we shall utilize our fuel hereafter will be . . . not by way of the steam-engine. . . . I doubt whether those who meet here 50 years hence will then speak of that motor except in the character of a curiosity to be found in a museum.

Three years later, before the same Association, Lord Rayleigh joined the steam-engine Cassandra chorus with equal prescience:

The efficiency of the steam-engine is found to be so high that there is no great margin remaining for improvement. The higher initial temperature possible in the gas-engine opens out much wider possibilities, and many good judges look forward to a time when the steam-engine will have to give way to its younger rival.

Shrewd as these men were in foreseeing the rapid development of the internal-combustion engine, they could hardly have chosen a more inauspicious time to inter the steam engine. While their prophecies were being recorded, Sir Williams Parsons was inventing the turbine, which, coupled with pressure and temperature increases and feed water heating by extraction, was to give steam such preëminence in large-scale power generation that when Bramwell's 50 years were up in 1931 only one and one-half per cent of the generating stations in his own country were powered by the internal-combustion engine that was to have relegated steam power to the museum.

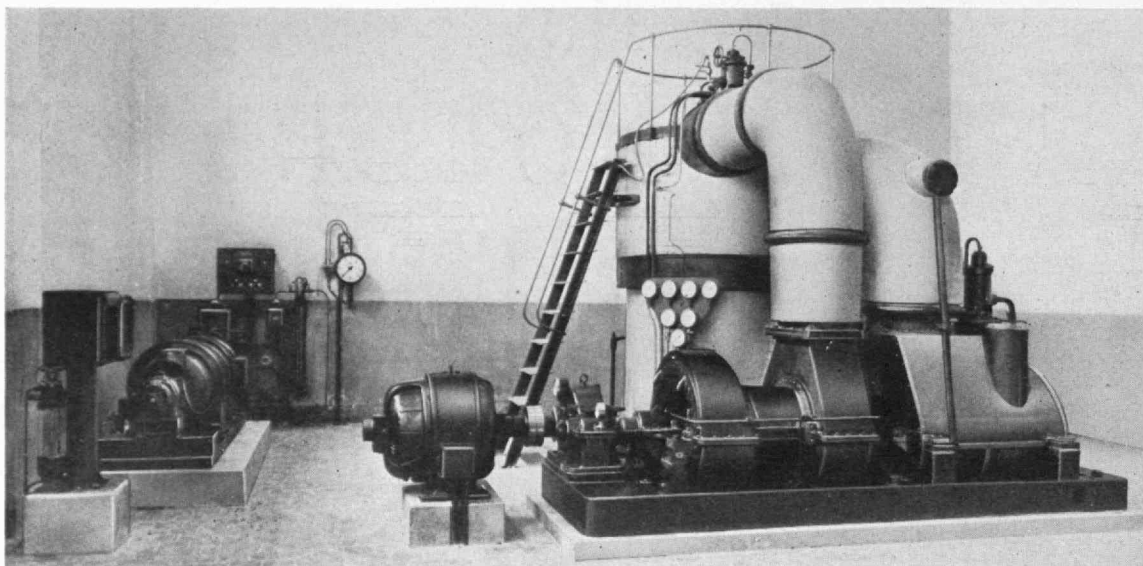
WE rehearse this episode in prophetic fallibility, because the Diesel engine is prompting similar forecasts today. Steam is stalemated, repeat the oracles of internal combustion, and they probably are as mistaken today as Bramwell and Rayleigh were.

Spurred on by the progress of the Diesel and the increasing advantages of steam, the designers of steam-operated prime movers and generating apparatus are boldly and successfully exploring new possibilities of increasing steam's efficiency. They know that since 1919 coal consumption has been lowered in steam plants from 3.2 pounds per kilowatt hour to less than 1.65 pounds at present. They know that three distinct avenues of development promise higher efficiencies over a wider range of capacities: (1) the employment of higher pressures and temperatures now that metallurgists are supplying metals able to withstand the higher temperatures; (2) the use of binary systems such as the mercury-vapor plants at Schenectady, Hartford, and Kearny; (3) the study of a new type of boiler, with reduced space and weight requirements, in which fuel is burned under pressure and flue gases are given high velocities with a consequent increase in heat-transfer efficiency.

THE last of these, the velocity or "Velox" boiler, is the most immediately beguiling because of its novelty. Originated in Switzerland by Brown, Boveri and Company, it has caused a stir throughout the world of mechanical engineering and given a new direction to research in steam generation.

Ironically, this new boiler was inspired by the Diesel engine itself, and its apparent advantages make it a direct competitor with the Diesel. In speaking of its use in ships, its able inventor, Adolphe Meyer, recently said in the Calvin Rice [90] Memorial Lecture as reported in *Mechanical Engineering*:





Mechanical Engineering

*Velox power plant with self-contained super-heater. Note how the entire plant is combined into one unit, its compactness, and small size. The Velox offers possibilities for use on rail cars and it can be adapted to existing locomotives*

The most important field of application for the Velox boiler is doubtlessly the ship. The small space requirements of this boiler and its low weight and high efficiency are of most value here, and the fact that it is essentially an oil-burning boiler is no drawback in most cases. In comparison with the Diesel engine, the Velox steam generator has the advantage that every kind of oil can be used, and there is no restriction as to the use of the more expensive gas and Diesel oils. The fuel consumption of the Diesel engine is, of course, lower than that of a Velox steam-turbine installation. The difference in price between Diesel oil and bunker oil is, in many countries, greater than the difference in fuel consumption, so that the fuel costs for a Velox are generally lower than those for Diesel engines. The Velox steam-turbine plant is also more favorable in regard to weight, except for long voyages where the excess fuel oil equalizes the weights in about 40 days steaming. The weight of a Velox steam generator is on an average one-fifth that of the ordinary oil-fired, water-tube boiler, and its space requirements, even compared with the most modern marine boilers, are less than half. Of great importance are its small height and the smaller dimensions of the flues and funnels. . . .

A fundamental difference between the Velox boiler and navy boilers [for warships] is that full load can be maintained continuously for any length of time with the same high efficiency as on part load. This efficiency amounts to between 88 and 90%, compared with 75% or less obtained with a forced ordinary boiler. The Velox boiler operates entirely automatically; the exhaust gas is completely invisible even at maximum output and has a low temperature. When steam is available from one boiler only, supplementary boilers can be brought from cold up to full load in less than five minutes.

By taking full advantage of the technical means offered by the Velox boiler, war vessels of hitherto unforeseen striking power may be built.

More than 20 Velox units have been built in Europe, in sizes ranging from four to 75 tons of steam per hour, for pressures up to 600 pounds per square inch and temperatures up to 850° F. The fundamental plan of all these units is as follows: Combustion air is compressed by a blower (this blower being driven by a gas turbine

operated by the boiler's own flue gas) into a combustion chamber at a pressure of 28 to 30 pounds per square inch absolute and burned at this pressure. The subsequent pressure drop of the flue gases imparts to them a velocity which yields a high rate of heat transfer.

Because of its high combustion-chamber output, the Velox, it is claimed, requires only one tenth or even less of the space required for the combustion chamber of an ordinary boiler. No refractories are used; the combustion chamber is entirely lined with water tubes. Water level, fuel supply, and combustion are all automatically regulated. These features recommend its use not only for ships, but for locomotives and for power stations and industrial services where gaseous or liquid fuel can be obtained cheaply.

Other advantages and features reported by Dr. Meyer include: *Higher Efficiency.* With oil firing and for stationary and merchant-marine boilers, the boiler efficiency, that is, the degree of heat utilization, amounts to 94 to 96%. The plant efficiency, including all auxiliary machinery except the boiler feed pumps, is 90 to 93%. For gases of poor quality or for naval and locomotive boilers, which on account of further reduction in weight have smaller preheaters, the efficiency is 2 to 3% lower. The efficiencies remain practically constant from one fourth to full load. All efficiency figures are based on the lower calorific value of the fuel.

*Automatic Control.* The load can be increased from one-fourth to full load in from 12 to 40 seconds without any appreciable pressure drop, and unloading can occur over the same range without blowing the safety valve.

*Rapid Starting.* As a result of the small masses involved, the absence of refractory brickwork, and the positive supply of fuel and combustion air, the Velox boiler can be brought from a cold condition up to full load in four to eight minutes, depending upon the size and loading capacity of the auxiliary motor.

*Small Space Requirements.* The necessary floor space, including adequate room for operating and erecting purposes, required, for example, for a boiler rating of

20 tons per hour is about 27 square feet per ton; for 50 tons per hour, 16 square feet per ton; and for warship boilers (60 tons per hour), five square feet per ton.

The most important advantage of the small amount of space required is the possibility of a compact arrangement of boiler and prime mover, whereby steam lines, pipe fittings, and other accessories can be dispensed with, the whole installation being simplified and the boiler house completely eliminated.

*Small Weight.* The weight of the complete boiler plant, including all auxiliary machinery, depending upon the output, is, for land installations, 1.2 to 2 pounds per 1,000 pounds of steam, and, for warships and "small boilers" 0.6 to 1.2 pounds.

These claimed advantages await the test of operating experience. With such low-water capacity, the boiler might prove a very frisky and temperamental device. The necessity for automatic governing imposes a responsibility on the governing system which American engineers have been inclined to distrust. They will also doubtless cast a fishy eye on the gas turbine, subject as it might be to corrosion and other destructive working conditions. It is possible that difficulties may be encountered in keeping the boiler's gas passages clean.

Whether this particular boiler is entirely sound or not, it does indicate that steam research is not stymied, that higher efficiencies are possible, that the Diesel, with its noise, its wasteful reciprocating motion, its complicated mechanism, and its high-cost fuel, had best look to its laurels. Certainly the announcement of the Velox boiler is turning American engineers into a new field of investigation that may, in the near future, yield still higher efficiencies in steam generation particularly in small units.

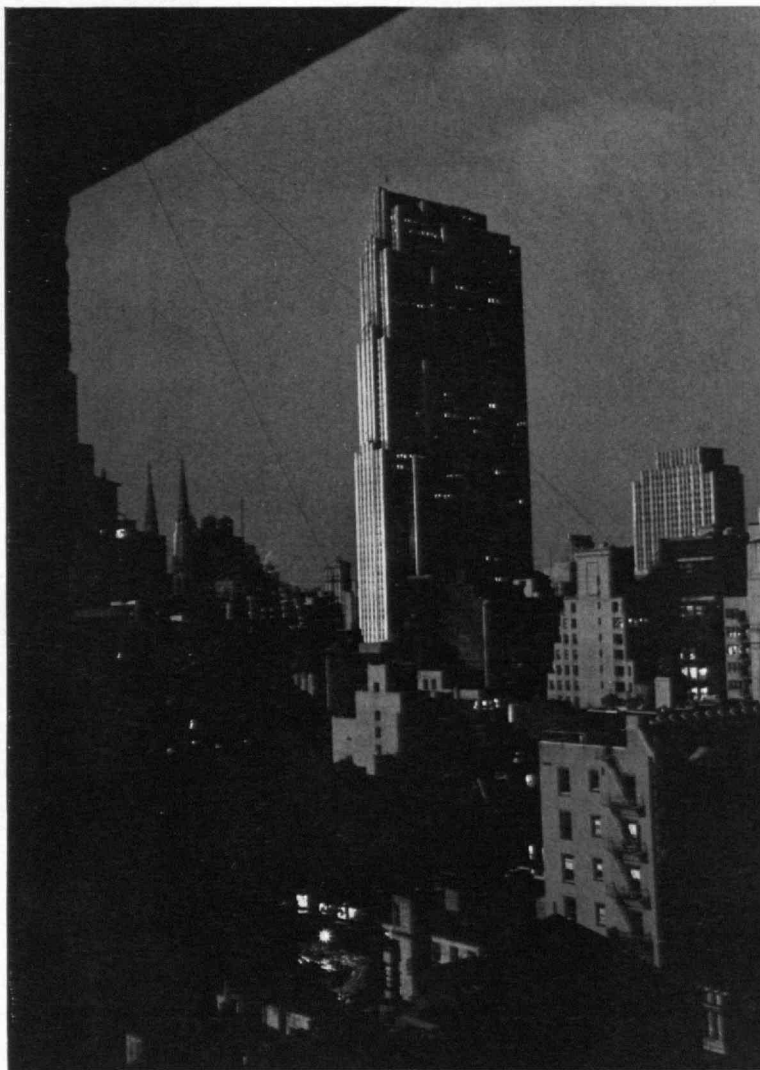
### *Mating the Metals*

NO dowager is more interested in matchmaking than the metallurgist; no eugenist can approach the skill of his selection or the science of his mating. His progress in the development of alloys continues at a pace that is apparent only after a study of the astonishing variety of metallic combinations that are now available for an ever-increasing range of applications.

Modern chemistry and physics, the microscope, x-rays, and an insatiable curiosity have led the metallurgist far beyond the stage of alloys made only from the familiar metals of commerce. Today he is investigating the lesser known elements, the materials for which no useful purpose has yet been found. Zirconium was once one of these. Now it is used as a substitute for manganese in steel. Beryllium is another. The ore from which it is made is beryl of the emerald family, and the cost of the first pound was \$200. It has been reduced slowly to \$25 a pound, and beryllium has already taken its place among valuable alloys of copper.

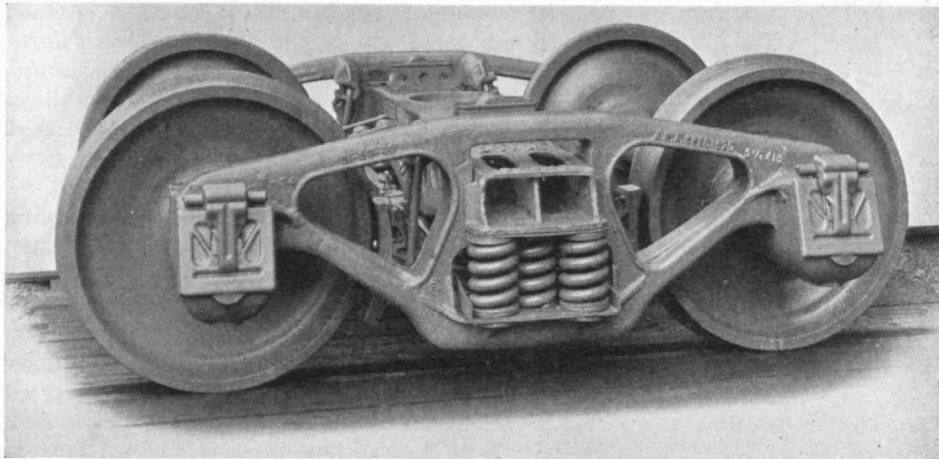
Aluminum and magnesium, while not rare metals, were once so expensive to produce in metallic form that the prospect of employing them generally seemed remote. Now they are the very foundation of light alloys of amazing strength. It is not so many years ago that magnesium's most important use was in flashlight powders and firecrackers.

Other rare metals the metallurgists are studying are rhenium, titanium, and hafnium. What may come from these investigations no one knows, but what has already been achieved demonstrates the remarkable qualities that may be imparted to alloys by the inclusion of minute quantities of other elements. A copper alloy containing less than three per cent beryllium becomes as strong as hardened steel. Tellurium combined with lead produces an alloy of finer grain and greater resistance to corrosion than lead itself. Gallium, a nontoxic metal, is now being used as a substitute for mercury. Molybdenum, first discovered in Japanese swords as an impurity which gave added strength to the steel, was later incorporated by the Germans in their cannon. Now it is part of a steel alloy widely used in automobiles. Thus the lesser known or rare and expensive elements



Ruth S. Baker

"Dusk" — The fading sun intensifies the eerie delicacy of man's strong towers, while photography captures a moment of mystery



Stronger and more durable than those of carbon steel, this truck of cast nickel-steel — Prescoloy — weighs 20% less

find new and useful applications. No longer does the metallurgist or the engineer hold to the old belief that certain metals only were the kind suitable for specific purposes. Often alloys prove superior.

The suggestion was made recently that the precious metals, such as gold, silver, and platinum be considered for wider application in industry. Their use, according to Frank E. Carter in a report to the American Institute of Chemical Engineers, would solve many problems of corrosion, acid and heat resistance. Longer life, improved products, and the high salvage value of precious metals makes them worthy of consideration, Mr. Carter believes, even if the initial cost is far greater.

The rapidity with which alloys are being developed is indicated by the number announced since *The Review* published a summary of important alloys in March, 1931. One of the metals mentioned at that time was cupronickel, a copper-nickel alloy which has since become tremendously important, particularly for condenser tubes. The secondary condenser tubes on the *Normandie* and most of the newer ocean liners are now made of cupronickel.

Among the important alloys now being widely used for purposes ranging from household appliances to piston rods for locomotives, are:

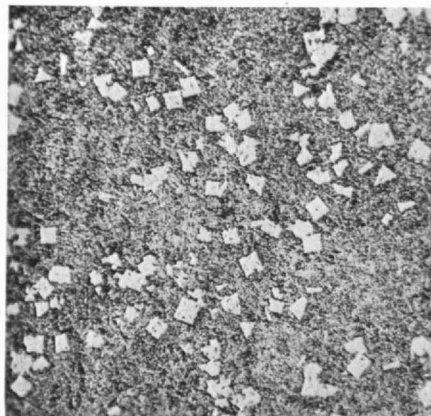
(1) *Ceralumin*. A British alloy, which has good casting properties and is suitable for airplane parts subjected to moderate loads and alternating stresses, as well as for parts of light-weight machines. Its weight is about the same as other casting alloys of aluminum. Ceralumin has remarkable fatigue strength.

(2) *Inconel*. An alloy of nickel and chromium which is being used as a lining for purposes where a metal highly resistant to a wide range of corrosive agents is desired. Inconel is bonded to steel and this nickel-clad metal, highly resistant to oxidation, is used for wine storage tanks, fermenting tanks, fatty acid stills, and other heavy equipment.

(3) *K Monel*. A new alloy which has the strength and hardness of heat-treated alloy steels with the corrosion resistance of monel. Its strength is more than 160,000

new uses are expected to develop.

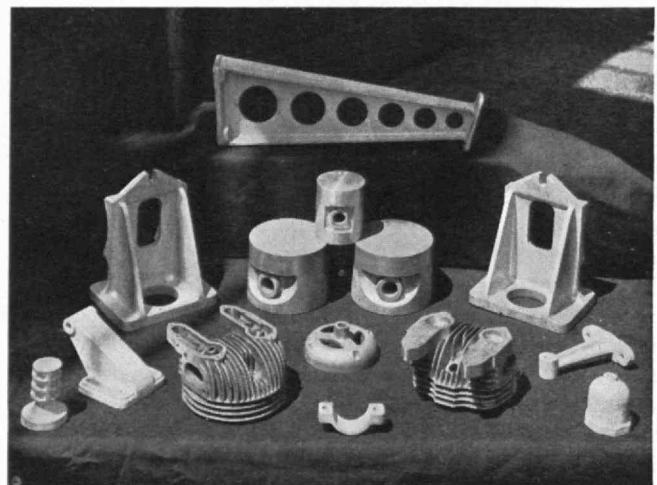
(4) *Asarcology*. This is a new cadmium-nickel bearing metal which is harder, stronger, and more ductile than babbitt. It was designed to meet the urgent need for a bearing alloy suitable for the severe service in high-speed, high-compression airplane and automobile engines operating at temperatures and loads of constantly increasing magnitudes. It is also being tested in turbine bearings and



New bearing alloy, *Asarcology*, of cadmium-nickel. It has a lower coefficient of friction than conventional babbitts

characteristic is desirable. It will undoubtedly find other important applications in engine design.

(6) *Beryllium Bronze*. While this important alloy is



*Ceralumin C*, a British development, provides a low-weight nickel-aluminum alloy for high-duty service in engine parts



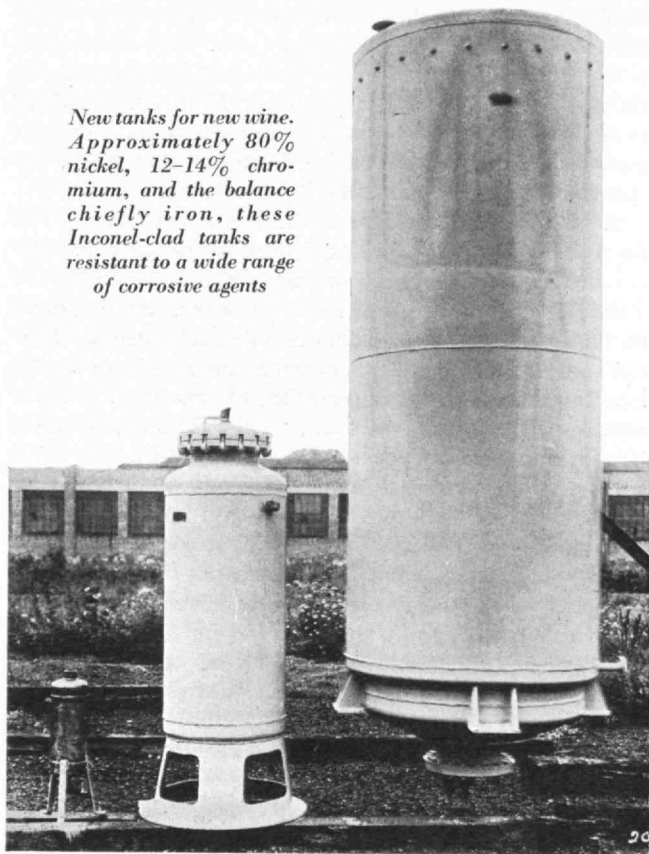
not new, it has found many new uses, particularly where its nonsparking properties give it special value. As a result, a complete range of nonsparking tools, including hammers, picks, chisels, wrenches, and others, are now available for industries where inflammable products make the use of spark-producing tools dangerous. The high strength and fatigue and the corrosion resistance of beryllium bronze make it especially suitable for leaf and helical springs operating in the presence of corrosive liquids.

(7) *Chromium Nickel Stainless Steels.* While these important alloys have been developed for some years, many changes in the original composition have been made during the past year for the purpose of increasing the ease of machining, resistance to special types of corrosive liquids, and resistance to oxidation and corrosion at high temperatures. It is significant that these improvements have been wrought not merely by changing the amounts or proportions of nickel and chromium, but in some cases by the addition of the rare metals, zirconium, selenium, or columbium.

### New Rubber for Old

TO produce synthetic rubber having physical and chemical properties about the same as the naturally occurring product has been for decades one of the fascinating problems facing organic chemists. Not long since, a new road to the goal was realized in a manner not expected by earlier workers, and so practical were the discoveries leading to the new synthesis that the du Pont Company is now building a plant to manufacture the synthetic rubber in commercial quantities.

*New tanks for new wine. Approximately 80% nickel, 12-14% chromium, and the balance chiefly iron, these Inconel-clad tanks are resistant to a wide range of corrosive agents*



Inco



Inco

*K Monel metal combines the strength of heat-treated alloy steels with the corrosion resistance of Monel metal. In kitchenware it has the appearance of silver*

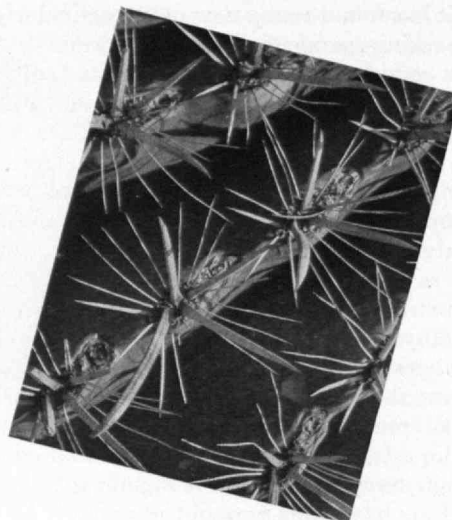
While the new rubber, which bears the name of DuPrene, is more costly than the natural produce, it possesses certain properties which give it an advantage. It is more resistant to oxygen and ozone and thus deteriorates more slowly in the air than ordinary rubber. DuPrene needs neither sulphur nor prolonged heating for its vulcanization. On the contrary, this process or its equivalent is accomplished in a few moments by holding what is known as the x-polymer at a temperature only a little above the boiling point of water. DuPrene withstands abrasion to a much greater degree than ordinary rubber. It can be produced readily in the form of an emulsion resembling the latex obtained from the rubber tree. Here again there is an advantage in that the particle size in DuPrene-latex appears to be smaller than in the natural variety, this permitting a more thorough impregnation of such ordinary fabrics as those made from cotton, with an accompanying increase in their strength. Even materials like leather, wood, and tile, can be impregnated successfully with DuPrene-latex. While natural rubber swells and may even dissolve in such widely used fluids as gasoline, kerosene, benzene, and lubricating oils, DuPrene is but little affected by them. Indeed, samples of DuPrene have been kept immersed in kerosene for more than three years without showing any appreciable change. By virtue of its superiority in this respect, and in spite of its relatively high cost, it has found a use in the construction of valves, gaskets, and the like, which must be used while immersed in oils.

Of all the various synthetic rubbers thus far obtained, DuPrene, alone, is like the natural product in that sheets of it, when stretched about 500%, show the x-ray diffraction pattern to be a definite point diagram. This behavior is characteristic of materials having their molecules arranged in some definite pattern as in a crystal and not a helter-skelter fashion as in an amorphous solid. When a stretched sheet of DuPrene is chilled in liquid air for a moment and struck a sharp blow, it shatters into fibrous fragments as does natural rubber.



Edwin M. Blake

The ultimate source of the materials for making DuPrene are coke, lime, salt, and water, together with all-important catalysts which speed up certain of the reactions in the process. The lime and coke are heated in an electric furnace to give calcium carbide which by reacting with water yields the gas acetylene, well known for the brilliant light it gives when ignited in a suitable burner and for its use in blow torches for cutting steel. Among its many chemical properties a molecule of acetylene has the ability to join with its



Fred G. Korth

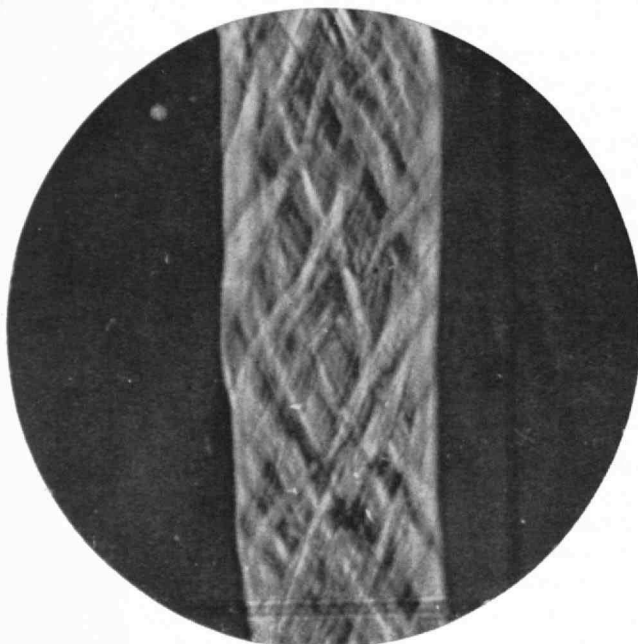
## NATURE'S GEOMETRY

Left. Parabolas caught in the rushes of Echo Park, Los Angeles. Above. Candy cactus

neighbor to produce a larger molecule. Thus, in contact with a water solution of cuprous chloride and ammonium chloride (sal ammoniac) two molecules of acetylene unite to form a new and very reactive compound known as mono-vinyl-acetylene. Under suitable conditions, in the presence of catalysts, hydrogen chloride (muriatic acid gas) readily adds to this compound forming a volatile, clear, water-white liquid, commonly known as chloroprene, but bearing the more formidable scientific name of 2-chloro-butadiene-(1.3). This compound is the building block for DuPrene just as isoprene (2-methyl-butadiene-(1.3)) is for natural rubber. Scientific evidence shows that many of these units join, end to end, forming the DuPrene and rubber molecules, respectively, as long filament-like structures.

It is of interest to compare and contrast the process for making DuPrene with that used for making an artificial rubber in Germany, for example, in 1916 and 1917. The ultimate starting point was the same, namely, coke and lime, but the steps from acetylene followed a different course. Advantage was taken of the ability of acetylene to add water, in the presence of catalysts, to form acetaldehyde, which, in turn, was combined, catalytically, with the oxygen of the air to yield acetic acid. Further steps consisted in consecutively manufacturing acetone, pinacol, and, finally, dimethyl botadiene. This last compound, warmed at 70° C. for five months, slowly changed to what was known as methyl rubber W (*weich* or soft). At best, it was much inferior to natural rubber and its day was over as soon as the extreme shortage of rubber ended. It could be kept in the air only when it was mixed with anticatalysts which prevented oxygen from combining with it.

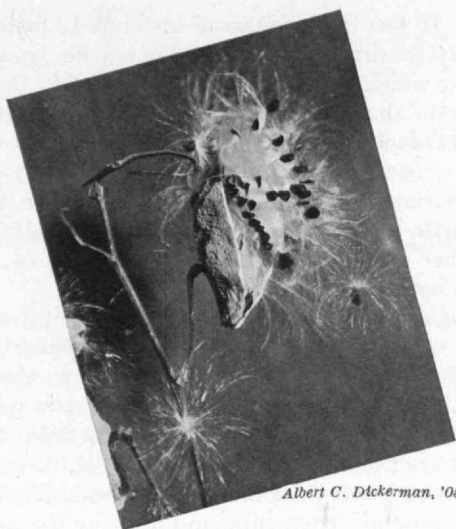
To be eminently successful, a synthetic rubber must possess properties which mark it as distinctly superior to the natural product. This advantage appears to be possessed by DuPrene.



## NATURE DESIGNS A COLUMN

Spiral reinforcement in a cotton fiber. The toughness and flexibility of fabrics is due in large measure to such structure





Albert C. Dickerman, '05

## ART IN NATURE

Above. The milkweed pod discharges its down. Right. Fluffy heads of bear grass at Glacier Park



Edwin M. Blake

## The Architecture of Textile Fibers

FOR many years, cotton fiber has been graded by the unaided senses of sight, touch, and hearing. But the cotton classer has not realized that the fibers he handles are even more doubly refractive to light than quartz, almost as strong as steel, and tougher than most engineering materials. Recent research in the Textile Microscopy Laboratory under the direction of Professor Edward R. Schwarz, '23, has shown why this should be so. More important, it has evolved a simple method, based on the use of a microscope with polarized light, for determining the maturity and strains of the fiber — important factors affecting the quality of the cotton.

In textiles, as in mineralogy, the polarizing microscope has become a necessity. Findings regarding fiber structure are being made through its use which would otherwise be difficult or impossible. It helps tremendously in the attempt to bridge gaps which exist in the study of fundamental fiber composition, both chemical and physical. X-ray analysis as employed for determinations of the atomic arrangement of crystals has also been applied to textile fibers and shows them to be crystalline structures. It is not able, however, to give information as to the exact way in which molecules are combined to produce the extraordinarily strong, tough, and flexible fibers of commerce. Modifications and extensions of x-ray techniques must be combined with modifications and extensions of microanalysis to furnish such information.

We are increasingly able (vicariously at least) to walk about among the molecules and fibrils of the fibers and to study their architecture and properties. Why should combinations of two gases (hydrogen and oxygen) with a powder (carbon) produce the materials upon which we depend for clothing, for power transmission by belts, for insulation, and hundreds of other mechan-

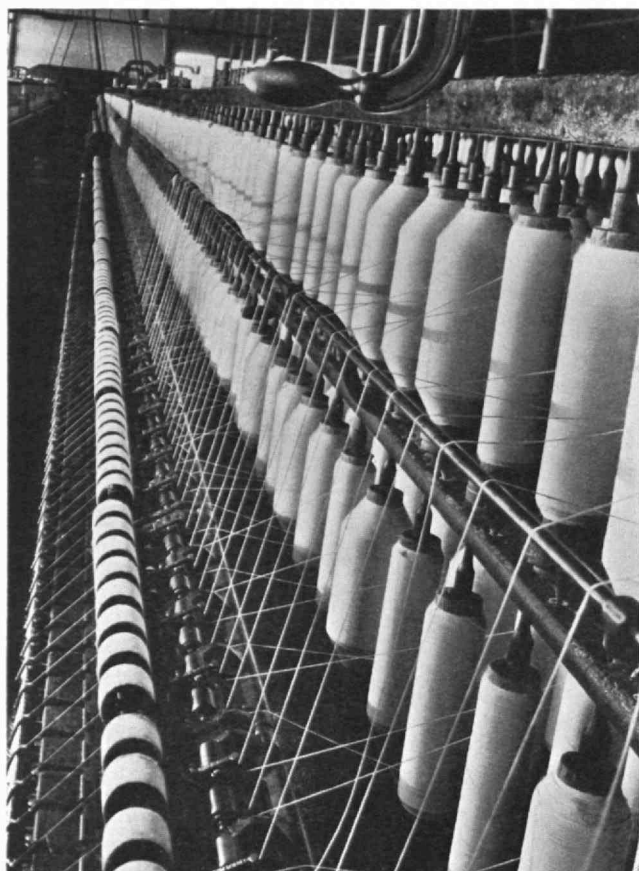
ical and chemical services? Why should the addition of a little impalpable gas (nitrogen) change a vegetable material such as cotton into an animal fiber such as wool or silk? Why should a particular arrangement of these elements, in wool, produce an extremely plastic fiber, yet one which will allow stretching up to 100% with eventual recovery? It is fortunate — particularly for those of us who value a crease in our trousers or a pleasing finish on our overcoat and suit — that this should be so.



MATURE

IMMATURE

Thick walls give strength. Cross sections of cotton fibers selected by the polarized-light method



Margaret Bourke-White

*Cotton fibers, the textile microscopist is discovering, are more refractive to light than quartz, almost as strong as steel, and tougher than most engineering materials*

Not only are the present researches at M.I.T. directed at finding the answers to such questions as these, but there is involved much valuable information inherently interesting to the designer of buildings, bridges, and machines. After all, Nature is a master builder and was at work for untold centuries before man attempted to build. When an engineer is able to construct a column as efficient as a plant stem, a cantilever as flexible and yet as rigid as a cotton fiber, or spiral reinforcements as beautifully effective and simple as the fibrils in flax or hemp, he may well be proud of his achievement. The study of the phenomena produced by properly controlled beams of energy — whether of ultraviolet radiation, polarized light, or x-rays — in their action on textile fibers is already productive of results of more than ordinary significance.

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## BOOKS

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### *Sullivan's "Science"*

IN the first sentence of "The Limitations of Science," issued in 1933, J. W. N. Sullivan asserted that: "Science, like everything else that man has created, exists, of course, to gratify certain human needs and

desires." It was the business of his book to define those needs and desires, to make plain to the layman the means by which science is utilized to gratify them, and to evaluate that gratification — a business performed to full satisfaction. Mr. Sullivan's new book,\* less ambitious in scope, proposes to set before the layman the main divisions of science; unlike the earlier work, it makes little reference to their philosophic significance; it is rather an objective and simple report of existing fact and hypothesis.

Having discussed in turn the earth, gravitation, matter, and radiation, the author concludes Book I of the "New Outline" with a section devoted to the "New Outlook." Here the electron which is at once wave and particle and the space which is at once finite and unbounded are explained in unusually clear, direct prose. Mr. Sullivan is adept in the use of specific illustrations to vivify general statements, and in tying the unknown to the known by means of homely analogies. Hence, he is able to give the lay reader a readily understandable summary of present accepted knowledge and belief, in a field as complicated as modern physics. This facility, however, is a hazard to him in Book II, for his discussion of life and evolution, though clear, becomes at times an ill-connected series of examples and illustrations.

Apart from its value as a storehouse of information, which is high, Mr. Sullivan's book has the charm of the disinterested and direct. Throughout, the tone of his writing is that of a man who has set out to write for himself, to fix, clearly and finally, what he knows, and to fix it in useful form. This dispassionate style, coupled with the recency of much which he records, gives the book a ring of great achievement, an expectant urge to hear the distant sound of greater things to come. A sentence such as the following, for example, is thus freighted with the sense that these are historic times: "In the year 1919 it occurred to Rutherford to bombard atoms with the  $\alpha$ -particles shot out by radium."

Thus far, one has, in the main, but commendation for Mr. Sullivan's work. There is a reverse to the medal, however; it is just to say that a book which pretends to stylistic effectiveness should be correct, and that an author who undertakes to discuss science must be exact. Yet Mr. Sullivan's book is marred throughout by elementary errors in grammar, and by occasional slips such as a reference to "the 93 known elements." Moreover, the subtitle promises a "new" outline; yet many of the analogies which illuminate these pages previously illuminated those of the "Limitations," and the substance of several passages is transplanted from the earlier to the later volume. The arrangement of the one is practically that of the other, save for the excision of the valuable consideration of philosophic values. This second book appears to have been written for a lower rank in the lay hierarchy. Or it may have been written before the more mature and judicious "Limitations" was composed. If it was not, one is forced, considering the comparative merits of the two, to say that it should have been.

\* Sullivan, J. W. N., "Science: A New Outline," New York, Thomas Nelson and Sons, 1935, xii and 282 pp., \$2.00.



# The Origins of Engineering

## *Its Comprehensive Contributions to Social Welfare*

BY D. C. JACKSON

*Illustrated from a sequence of mural panels by David Leavit, in the Museum of Science and Industry, Chicago*

IT IS a romance—the story which relates the gradual unfolding of scientific discovery and invention and their influence on the rise of social organization. It is a romance, and yet it is real. The romance embraces the transfer of physical labor from human shoulders onto machines and the increase of emphasis on human intelligence in contrast with brutality.

Instinct, alone, was sufficient to inspire the prehistoric man to choose a cave for his abode in temperate zones or to arrange a grass and leaf shelter in tropical areas. Those things are done by the dumb beasts through the exercise of instinct. Perhaps to instinct may be ascribed the first use of fire by prehistoric man. It possibly did not require creative intellect for the cave

the waters, while they, themselves, fled for safety to higher ground in company with the jungle beasts. Some dweller, however, more active-minded and physically indolent than his fellows, became discontented at the inconvenience of periodically restoring his shelter and slaving to replace whatever other movables he had possessed. The sharpness of this discontent finally caused him to use his mind and observe that the flood had never submerged a nearby rise in ground. Here was the first hydrographic survey. He built his new shelter on the rise.

After further floods, his slower-witted fellows followed his example and, a community or village of shelters grew up. Thus early, loose community relations were formed. Such communities of grass houses can still be



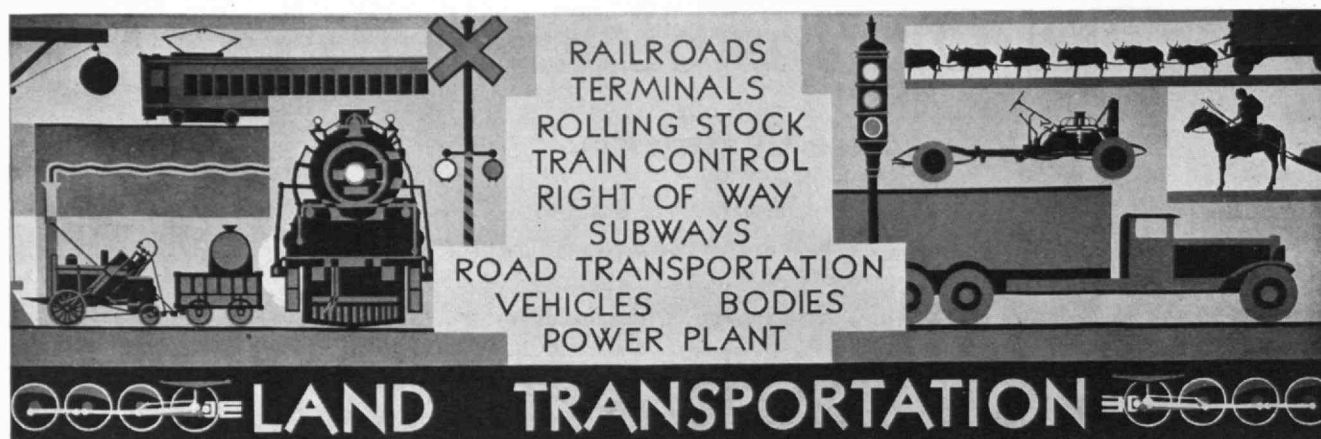
man to build a fire in the cave and to roast meat, after the heat of lightning-set forest fire had exhibited itself to him and the flavor of fawn accidentally roasted in that fire had been tasted. However, further changes in the modes of living came to pass with the development of simple, man-made structures and machines that required creative spirit. Here was the birth of engineering in its earliest simple embodiments. This birth was an outcome of the lives of a creative-minded few living in the prehistoric days. The period apparently was tens of thousands of years ago and records of those days are lacking, but we can hypothetically reproduce the conditions with considerable convincingness, utilizing for background a combination of archaeological data and human psychology.

Tropical plains watered by great or small rivers are, and have been, subject to overflows that culminate in great floods in the annual rainy seasons. It may be surmised that tropical dwellers in grass and fern-leaf shelters found their shelters periodically swept away in

observed on high ground of the plains of Indo-China and Siam, of course with many ameliorations of conditions compared with the earliest communities. It is likely that the village-community tendency chronologically succeeded the individual engineering observation and the resulting improvement.

The cave man's problem was different. We may picture it as a problem of fire instead of water. Smoke from the fire built in a cave dwelling disturbed the proprietor's relaxation and sleep. Expostulation, however strong, with the fire tenders (the wives and children) was fruitless. Finally, one male cave dweller, more active-minded than his fellows, was so annoyed at his own continued inconvenience that he undertook to modify the situation. This resulted, through cut and try, in a fireplace structure at the mouth of the cave made of flat stones and partly protecting the fire.

The slower-witted cave dwellers gradually came more or less to copy the first successful structure, and thus some of these dwellers secured relief from inconvenience



as a consequence of the invention of their fellow man. The stone huts of the aboriginal Kabyles, who now dwell in the mountains of Algeria, are windowless and have ingress and egress through a hole in the roof that also serves as smoke outlet. They may be a development that grew out of the earlier crude fireplace structure. If this inference is correct, it is another illustration of the chronological relation of the village-community tendency to engineering observation and improvement.

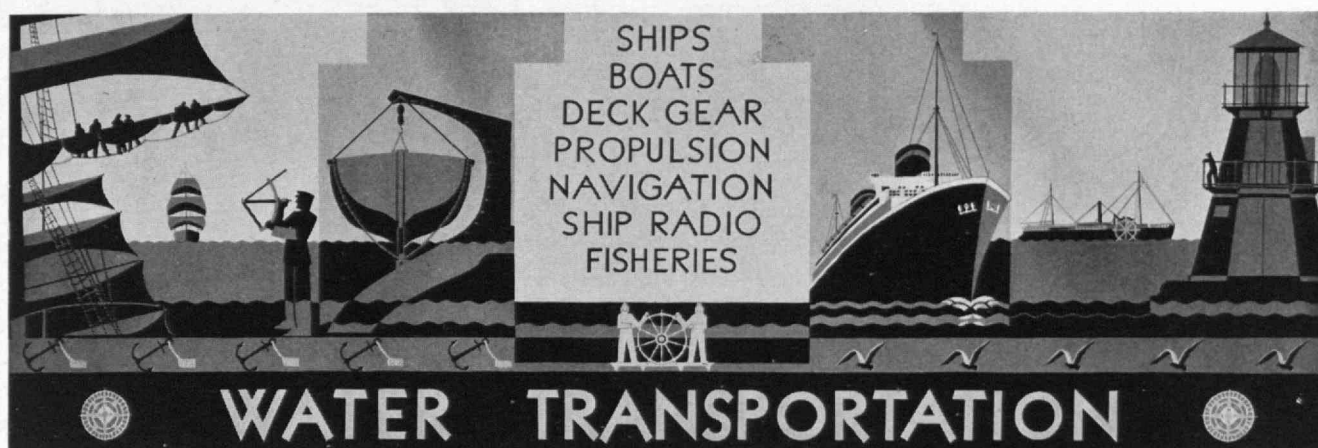
Tools and also simple weapons are evidences of artisanship. We must seek for the trail of structures and machines, as distinguished from artisanship, in order that we may trace the development of engineering through its origins. I have referred to possible examples of rudimentary steps in the development of structures. The development of machines apparently lagged. The effort required for combining mechanical elements into machines demanded a deeper intellectual exertion than was required to make rudimentary surveys and plan rudimentary structures. The archaeologists' deciphered records of machines go back only for periods of some thousands of years. The advantage of differentiating between implements of like kind according to their intended use, by making variants for different kinds of use, seems to have been recognized very early. An example is a variant of arrows provided with stone heads in the Stone Age, which, it is inferred, from what data exist, were so arranged that war arrows left the head in the wound when the shaft was withdrawn and hunting arrows

could be withdrawn intact from the stricken animal. The creative quality required for invention of machines, however, is too abstruse to become stirred until the friction of inconveniences in living has created much mental warmth.

The wheel, an extraordinary contribution to muscular relief which we now take for granted as though it were a part of original genesis, is a work of man that comes as a tool to us moderns from the musty ages of unrecorded history. If, as ethnologists tell us, human intelligence has not changed in qualitative character over long ages measured in ten-thousands of years, we can reliably picture the mode of development of the wheel and its application to vehicles. One conceivable path for the invention is easily traced in the light of our present modes of mental reaction. Nomadic habits began very early, either for families, clans, or tribes, and we can picture the discontent of the most mentally active men, even in a crude and unformed race, as season by season they faced the inconveniences and wear and tear of family movings across country. The physically indolent but mentally keenest of the men became wearied of dragging individual belongings, or having them half carried by draft animals, or of transporting them on the backs of women and children, or of loading the personal riding horses with goods. The delays pertaining to such transport naturally added to the annoyance. The weariness from time to time must have sunk to the soul of some such man, desire for release from the deadly annoyance must have fired his mind, and inventions







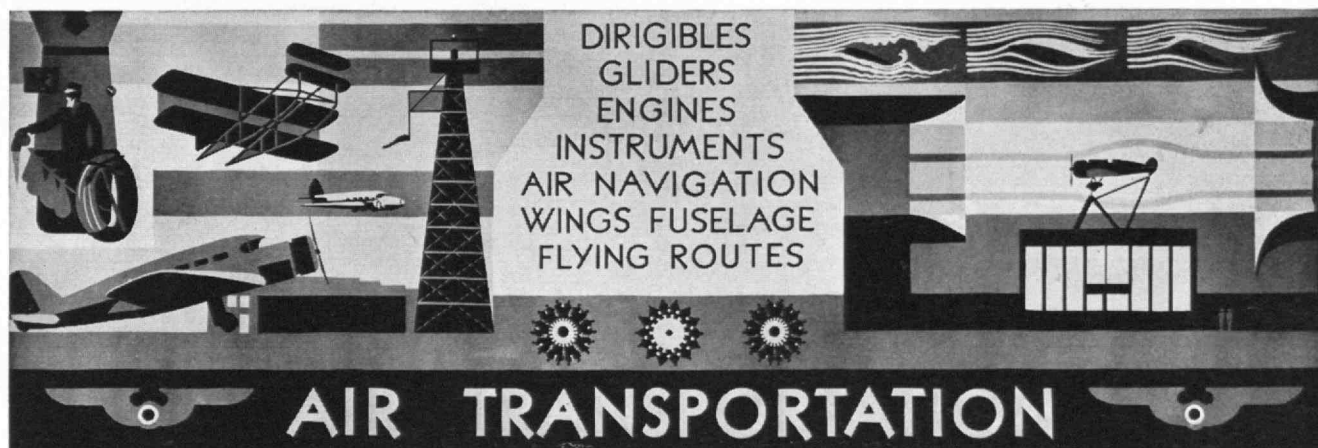
followed as time progressed. Sleds are known to have been utilized in the early ages. Loose rollers were also utilized. Then controlled rollers may have been tried, and other such expedients. Finally, two sections sawed off the end of a roller, mounted at the ends of a wooden trunk, gave the wheels-and-axle structure, and the two-wheeled cart was on the way. Dr. George Grant McCurdy says the wheel is a neolithic invention. Its introduction into use was slow until recent millenniums, because hunting and fishing probably were the principal sources of food for men in the Neolithic Age, formal agriculture and domestication of animals not then being generally practiced and tribal nomadism not yet established.

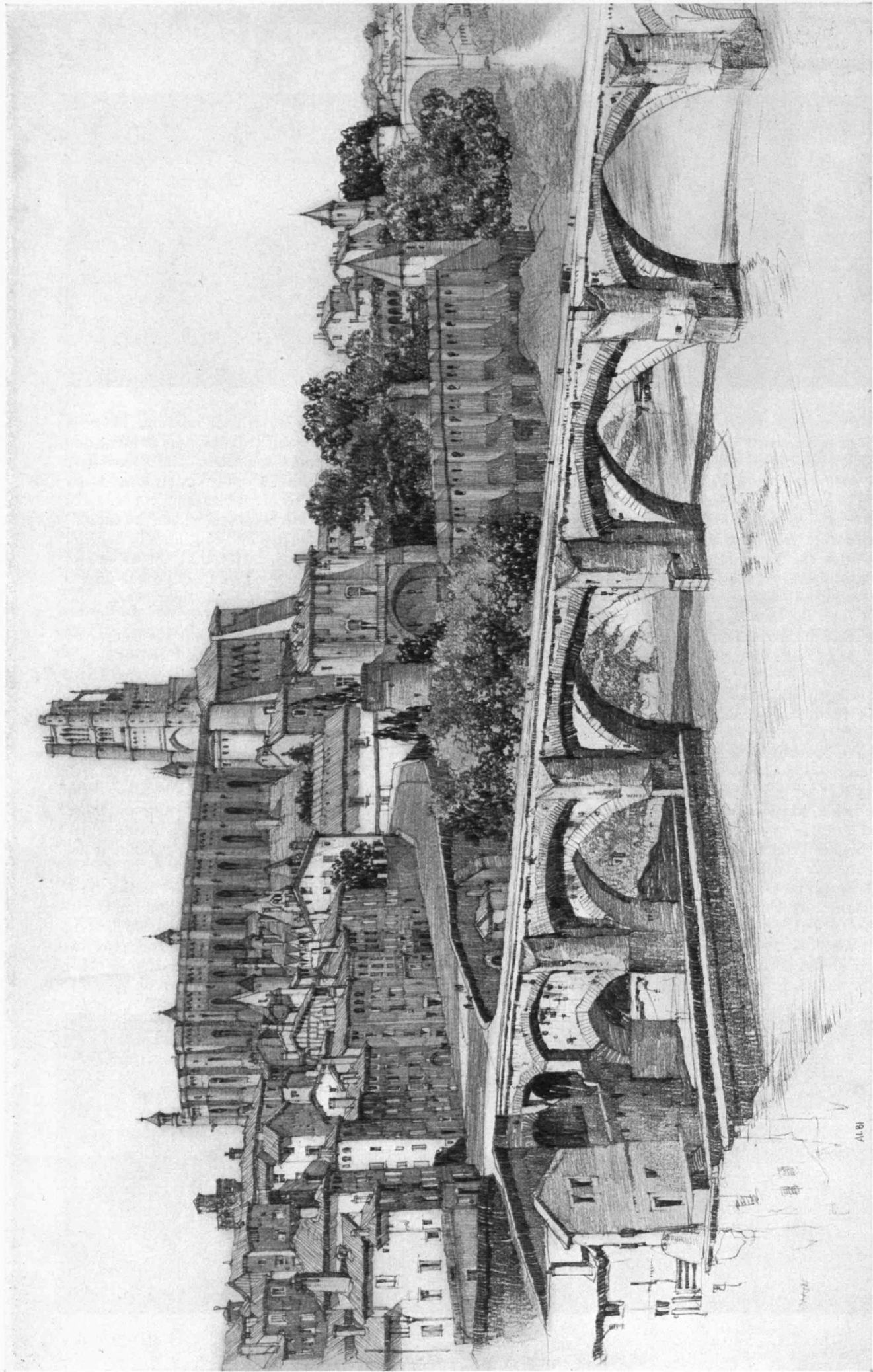
In a developed brain like that of early neolithic man, the ability for invention may have existed, but sufficiently sharp recognition of keen inconvenience may not yet have chanced to arise in such a manner as to cause its exercise on complex improvements. Beginning with the latter part of the Stone Age, when the numbers of people were considerable in various parts of the world and hand weapons had become somewhat effective, the insecurity of life and property was appalling, according to our standards. With each step forward, however, in progress by inventions, the tendency toward community living, accompanied by a growing respect for mutual interests, seems to have become greater. It was only after the stimulus for making inventions had resulted in an easier life with respect to food and shelter and had released more time for cultivating

physical ease, that growing ethical relations between man and man and tribe and tribe became evident and community living became smoother. The speculative philosophers sing an intellectually interesting story which describes the fabric of civilization, but it is the inductive scientists and inventors on whom the unfolding of the fabric has depended and continues to depend. It is from the work of the latter that the origins of engineering have been derived and additional origins will become disclosed as long as their work continues.

It seems rather well established that man enslaved fire and converted it to his service in the Pleistocene Age of geology, some hundreds of thousands of years ago. It also seems well indicated that *Homo sapiens* did not rise up and start upon his career of great inventions until some tens of thousands of years ago. *Homo sapiens* apparently began his special career by domesticating animals and crudely establishing the cultivation of agricultural crops. Man already was distinguished as the user of crude tools and weapons made of stone and bone. As far as speaking for its conditions of life is concerned, the far past is as silent as a basket of clams, but it has left its records, nevertheless.

The development of agriculture came in the Neolithic Age, possibly some 10,000 years before the Christian Era. It may have been keenly practiced first in Egypt some 6,000 to 10,000 years ago, but perhaps was actively practiced earlier in Mesopotamia or some other favorable region of the world. (Continued on page 74)





ALBI, THE MIDI, FRANCE

A pencil sketch by Samuel Chamberlain, '18, from the book "The Use of Brick in French Architecture" (Part I, The Midi) by William Emerson, Dean of Technology's School of Architecture and Georges Gromont, Professeur d'Architecture à l'Ecole des Beaux-Arts.

This book accents anew, and with understanding and charm, the position brick holds "in the opinion of the architectural profession and of the discriminating public." The cathedral at Albi, despite being relatively unknown, is one of the finest churches in the world with its "flaming mass of rose-colored bricks — the proudly tapering tower starting from such massive foundations and terminating in such delicate and lace-like detail."



# At Home Abroad

## Experiences with the Yankee in European Waters

BY R. D. FAY

AT THE tender age of eleven Professor Fay and Frank C. Paine are reputed to have joined forces in building a boat — which explains, in part, how Professor Fay subsequently became an electrical engineer and Mr. Paine, a designer of racing yachts, notably the *Yankee*. This early collaboration, plus the fact that Professor Fay is a descendant of Nathaniel Bowditch, may also explain why he was selected as navigator, under Skipper C. F. Adams, of the *Yankee* during her cup trials a year ago, and why Commodore Gerard B. Lambert called him to England this summer to rehearse old times with Designer Paine and to navigate the *Yankee* for her season of racing against the English J fleet. Which explains, finally, why Professor Fay writes so intimately and feelingly of English yacht racing. — THE EDITOR.



The *Yankee* bow on, as seen from the *Endeavour*. Deep in the background is the English royal yacht, *Victoria and Albert*



E. P. Jones

The *Yankee*, rigged as a yawl, leaving Boston in an informal transatlantic race against her "tender," the schooner *Atlantic*. *Yankee* won

I LANDED at Plymouth, June 27, and proceeded to Falmouth, where the J fleet was to lie that night. Having located a yacht club, I asked if I could be put aboard *Yankee* or *Atlantic*. I expected that a club boat would be available for this purpose. Probably it was — I never found out. Nothing would do but to have the commodore's launch take me out. This was quite typical of the courteous treatment that we received everywhere in England all season.

Falmouth is one of the very few natural harbors that we saw. We were assured that there was plenty of water for us inside the inner harbor. Two of the boats, *Shamrock* and *Candida*, elected to lie there; the others stayed in the outer harbor. A race was scheduled the next morning at the usual hour, 11 o'clock. At about 10:45 a committee boat chugged alongside and asked if we would consent to an hour's postponement because *Shamrock* and *Candida* were fast aground! They got *Shamrock* off in time but not *Candida*. We were somewhat astonished at the end of the race to see these two boats return to the same anchorage. However, they dropped down to the outer harbor before the tide got too low the next morning. Later in the season nothing astonished us.

The race that day was rich in educational value. *Astra*, the smallest boat in the fleet, actually finished first, in spite of the fact that she gets a time allowance of nearly nine seconds a mile from the three scratch boats: *Yankee*, *Endeavour*, and *Velsheda*. We were beaten half a length by *Velsheda* for the last place, *Britannia* having withdrawn. We held a post-mortem and agreed that we were going faster than any other boat when sailing under like wind conditions. It followed that our tactics must be wrong. We had sailed the race as we would have in American waters, which is to say, that we always tried to cash in on any gains by placing ourselves between the mark and the particular boat we were beating. In practically every case the result was that we got out of a nice breeze and left the other boat in it. We, therefore, decided that we would concentrate our efforts in finding a good breeze and keeping in it.

We won the next three races. This was the only time in the season when a boat did win three in a row. It is known in England as "the hat trick" — I never found out how the term was evolved. The first of these wins was not entirely deserved, in that *Endeavour* ran into a pocket when leading us by almost five minutes. She was becalmed without steerage way for ten minutes, while the rest of the fleet sailed merrily around her. This was the only time I can remember when *Endeavour's* luck was bad. The other two races were at Plymouth on the 3rd and 4th of July. In both we lead from start to finish in a good, steady breeze.

The first leg of the July-4 race produced the show of the season. There was a single-reef breeze about abeam driving the fleet at 12 knots. At this speed, a large displacement wave is pulled up, which makes it possible for a slower boat to ride the wake of a faster. This maneuver is spectacular, but it is not easy on the nerves to see a very sharp bow a foot from your counter when you are doing 12 knots. Also, the sound effects are not pleasant. These tactics are actually quite free from risk — provided nothing happens suddenly to reduce the speed of the leading boat.

The courses in these races were quite different from the America's Cup courses off Newport. In the latter, marks are placed just before the race so as to give a true beat to windward on one leg. There are no headlands. The race is not started unless there is a reasonable amount of wind, and there is a time limit of five-and-a-half hours for 30 miles. In England, the usual course is three times round a triangle about four-and-a-half miles on a side. The triangle usually fits neatly in a bay surrounded by high cliffs. The starting line is as close to shore as depth of water permits; the start is at 11 o'clock, regardless of weather; and there is either no time limit or a very long one. On the other hand, in light air the race is usually shortened to one or two rounds. In a bay with high headlands the winds are bound to be streaky, especially if the breeze is offshore.

There is a good reason for the English type of course. They race for cash prizes put up by the town in most cases. Obviously, it is necessary to put on a show for the spectators, hence the course is laid out in such a manner that the yachts are at all times plainly visible from the shore. Some of the effects of this system are: There is three times as much work for the crew in changing sails; tactics must be adjusted to the limited sea room; and the racing is far more fun.



Commodore Lambert, Navigator Fay, and Designer Frank C. Paine aboard the *Yankee* in Dartmouth Harbour



After *Yankee's* mast went overboard at season's end. Note how the steel tube crumpled

Having learned enough about conditions on the West Coast to give us a bit of confidence, the scene was shifted to France. The contrast was rather striking. The French people take their midday meal seriously, so the races were started at two o'clock and the length of the course was chosen accordingly. Since the Bay of the Seine is wide and full of shoals, the best they could do to give the public a show was to have one leg of the race in a channel along the shore off Le Havre. This leg was only a mile long, running from south to north. It was followed by a leg five miles to the west, then back to the start, twice round. The morning of the first race produced a light northerly breeze. We were assured by those who had been there before that the north wind never lasted. It was still blowing from the north four days later when we left!

The tides on this coast approach Bay-of-Fundy conditions. There is a rise of about 24 feet. As might be expected, this involves a formidable current along the shore. On the short, windward leg it was not possible to cheat the tide, since it was necessary to tack between the shoal water near shore and a ledge offshore, which hardly gave room to get up to speed between tacks. The breeze on the whole course was streaky and intermittent in contrast to the West Coast, where the streaks were fairly permanent. The starting signals and starting range were on shore about a mile from deep water — barely visible without glasses. In addition, no gun accompanied the first warning signal. As a result, we found ourselves in an ideal position to make a perfect start five minutes late. We got the official chronometer time for the next two starts. In the second race we nosed out *Velsheda* for second place at the finish, after she had wrecked our start; in the third, we got a beautiful start and lead all the way. In this race, *Britannia* was over the line too early and was recalled. She was between us and the committee, who, therefore, could not see whether we were early or not. I could not see either, but it was a close thing.

Our French pilot deserves a word. By the time we could get our questions translated into understandable French, it would be too late to benefit by his answers. On the other hand, if a boat tacked in a position unfavorable to us, where we (Continued on page 70)

# Objectives Old and New at M.I.T.

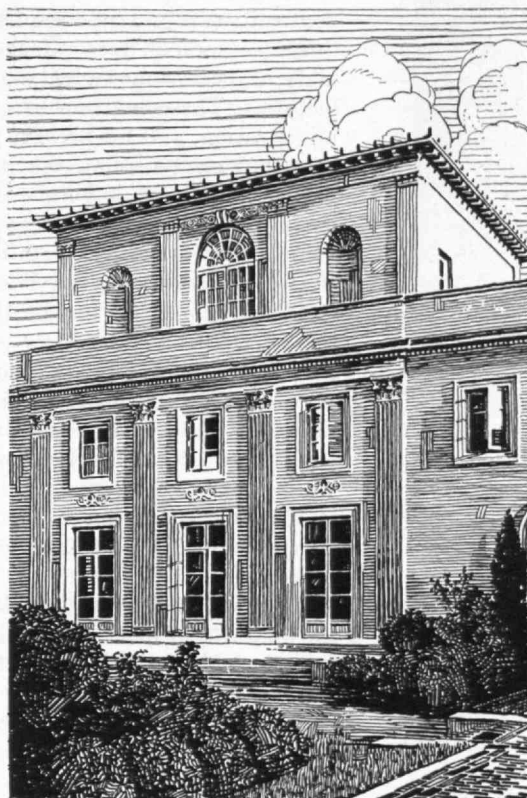
*How Can the Institute Best Accomplish Its Purposes?\**

BY KARL T. COMPTON

IN DECIDING what objectives we shall strive for as we look to the future at the Institute, it is important, first of all, to see clearly our basic purposes — our *raison d'être*. It is in the spirit of the times to check plans and practices against the constitution — in our case our charter — to see if we are moving toward the objectives there set forth and if we are convinced that these objectives are sound.

The charter of Technology was granted by the General Court of Massachusetts in 1861 “for the purpose of instituting and maintaining a society of arts, a museum of arts, and a school of industrial science, and aiding generally by suitable means the advancement, development, and practical application of science in connection with arts, agriculture, manufactures, and commerce.”

In interpreting this charter, I believe that the real purpose of the Institute, as specified by its founders, is expressed in the last phrase “and aiding generally by suitable means the advancement, development, and practical application of science in connection with arts, agriculture, manufactures, and commerce.” Obviously, the society of arts, the museum of arts, and the school of industrial science were among those “suitable means” whereby this purpose could be carried out — means which appealed to the founders as particularly appropriate and effective; but these things were means to an end, the end being the advancement, development, and practical application of science in connection with those aspects of our national life in which its welfare may be promoted through science. This is a magnificent objective. It is the very mainspring of that type of progress which is the distinctive feature of our civilization. It is almost overwhelming to contemplate the extent of the influence, direct and indirect, which this institution has had in shaping the last 70 years of the development of our country, in engineering accomplishment, scientific progress, creation of new products, and promotion of public health. At the same time it has led thousands of people to experience the



*President's House from the Garden — Kenneth Reid, '18*

joy of creative accomplishment. We sit, therefore, today as custodians of a truly great ideal of institutional public service.

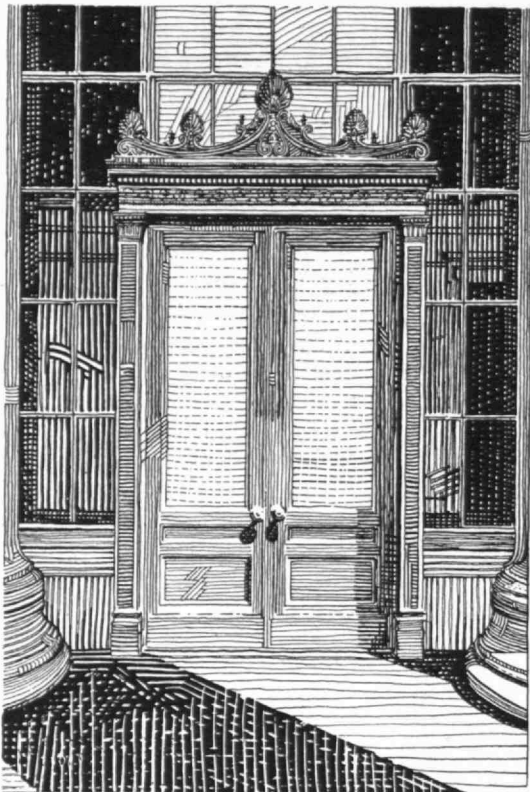
Granting, therefore, the past justification of the purposes for which this institution was founded, does it follow that these purposes will be equally worthy of our continued effort and support in the future? From every angle that I can approach this question, the answer is, emphatically, “Yes!” At no time in history has scientific progress been so rapid as at present and at no time has there been such rapid development of new materials, processes, and products of engineering and invention. The trend is definitely upward in this field. It is logical that this should be so, since the greater our body of scientific knowledge and technical skill becomes, the greater is the opportunity of

finding applications of this knowledge and skill to achieve desirable purposes. The world, and particularly our own country, is rapidly entering an era in which scientific management and technical skill will be increasingly important. Up to this time in history, growing population and the increasing demand of individuals for better standards of living have been largely aided by drawing upon the gifts and resources of nature, made available through expanding geographical frontiers. These frontiers have now been extended to cover practically the entire desirable portions of the earth, and the natural resources of soil, timber, and minerals are in process of being pretty completely exploited. It is inevitable, therefore, that men must learn how to use what they have more efficiently and find alternative sources of exhaustible products. I can, therefore, see no other answer to the question of the future than that the advancement of science will become an increasingly important condition of human welfare.

In considering this utilitarian aspect of our mission, we should also not lose sight of its cultural aspect. Our increasing contact with and dependence upon science and its applications will continually raise the level of scientific education required to give any man that sympathetic understanding and appreciation of life which is the essence of true culture.

\* Excerpted from President Compton's Annual Report, presented to the Corporation on October 9. The full report is now being printed and copies may be obtained for the asking.





Main Entrance, M.I.T. — Kenneth Reid, '18



East Pylon, M.I.T. — Kenneth Reid, '18

I would, therefore, summarize these considerations by asserting that our charter provides a sound directive for our efforts, that the purposes of the Institute have an ever-increasing value, and that, as trustees of this institution, we have a mission of no mean importance to insure the best possible accomplishment of its purposes. The practical question before us is: How can the best possible accomplishment be secured?

Certain important prerequisites to the successful fulfilment of our mission may be treated with but a word, for they are obvious generalities. The prime requisite is to have the highest possible quality of men on our staff, the second requisite is to have a good body of promising students, and the third is to have adequate facilities. These matters are the continual concern of the administration, and for present purposes I will take it for granted that they are receiving due attention.

The problem that I have in mind is more specific and more basic. Perhaps it can be suggested by the questions: What kind of men do we need on our staff, and why? What kinds of facilities should we have, and why? What type of students should we have and how should we handle them? In short, in what direction should we bend our efforts to be most effective in advancing, developing, and applying science for the public welfare?

In approaching these questions, we should first make an appraisal of our situation and environment, in order to see where our efforts can be directed most advantageously. We find in the United States 630 colleges and universities, practically all of which give instruction in science. Taken together, these colleges expend more than \$550,000,000 a year on their programs and enroll nearly 900,000 students. Among them, we find distributed throughout the country, 155 degree-granting engineering schools, the majority of which are qualified to give good basic instruction in their fields. In addition to these, there are a great number of technical high schools, trade schools, and industrial institutes which perform a valuable service in preparing young people for industrial employment as intelligent, skilled technicians.

Just where do we fit in this picture? Thanks to the idealism and generosity of donors who have believed in our mission, we find ourselves possessed of endowment and facilities superior to those of other institutions in the same field of endeavor. I think all would agree that, under these conditions, our full opportunities will not be met by simply turning out more scientists, engineers, and architects of essentially the same type and by the same methods as they are already being turned out in large numbers elsewhere. I say this in no disparagement of the work and value of our sister institutions, which are effectively meeting great needs of the country for men with this type of training. I say it only to emphasize our unique responsibility to perform a service in the field of technology which is not already being adequately performed and which can be so performed only with the aid of facilities which we have or can acquire.

It is not difficult to discover those particular directions in which the considerations of national need and of our facilities show our particular opportunity, for our recent experiences exhibit these features in striking manner. These experiences are:

1. Despite general unemployment, there is and always has been an urgent call for men of exceptional qualifications of character and training. With all the money which is being spent on education, it has seemed unbelievable, but it is true, that we simply do not know where to turn to find men whom we can unhesitatingly recommend for positions which are brought to our attention daily. This fact I consider to be the most important indication as to the direction which our major efforts should take.

(Continued on page 64)

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# THE INSTITUTE GAZETTE

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PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

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## *From the Counting Room*

THE annual report of the Treasurer of the Institute, presented to the Corporation at its October meeting, again reveals the pleasant news that the Institute was able to balance its operating budget of approximately \$2,695,000 by the scant margin of \$238.73.

If you think there was no thrill in that small-change figure, please consider a moment. The Institute has been operating on a complete operating-budget plan for about 20 years. Prior to that time, the administration and teaching salaries and the academic expenses were budgeted, but the other expenses were a matter of continued watchfulness and considerable prayer. However, in these 20 years of budget making, which occurs in the spring preceding the fiscal year itself, at no time have authorized expenditures been made *deliberately* in excess of a conservative estimate of the income for any year — with the single exception of the year just closed.

The Institute has seldom drawn upon the principal of free and unrestricted funds for current operating purposes, but it was necessary, in anticipation of last year's operation, to make certain academic replacements and certain academic expenditures to insure and maintain the standing of the Institute in the several departments which are its own particular field.

On this account, the planned budget for 1934-1935 called for appropriations of approximately \$65,000 in excess of any reasonable income estimate at that time, and the understanding was that, if necessary, this amount would be withdrawn from the principal of unrestricted funds. The theory was that this was to be the Institute's low year, there being a lag of a year or two in the effects of general financial and business ups and downs as far as educational and other similar institutions are concerned. That the Committee should be commended for its viewpoint and was justified in taking such action is shown by the result of the financial operations for the year.

As expected, the student income fell off \$48,000, but improved business conditions brought a return from the investments of \$61,000 in excess of the previous year, and there was sufficient other income to make it possible to balance the budget — including the excess appropriations of \$65,000 referred to previously.

Again is recorded the complete coöperation on the part of all officers and members of the staff, who contributed largely to this result. The salaries-reserve plan was in effect and deductions were made until January first, at which time it was evident that further accumulation would not be necessary. On June first, the full amount of the deductions was returned to staff and employees.

Turning to the expenses of the year, the academic expenses increased \$60,000, administration expenses rose \$6,000, plant expenses (entirely because of building

alterations) were up \$4,000, but miscellaneous expenses decreased \$22,000, giving a resulting total net increase of \$48,000. The Institute's cumulative deficit on account of operations since 1865 now stands at \$24,951.22, a reduction from the previous year of \$4,927.42 due to credits received from operations prior to July 1, 1934.

The Treasurer's balance sheet shows that the endowment funds now total \$31,767,649, a decrease of approximately \$81,000 over the previous year — this, in spite of capital gifts and additions of \$484,558 — a marked upward turn over the past few years. Of this, \$257,000 was received by the Institute in the distribution under the Edwin A. Wyeth Trust. The Institute has acted as trustee of this fund since December, 1913, at which time Mr. Wyeth turned over to the Institute all of his property under an annuity arrangement made in his behalf and that of his daughter, with provision for later distribution of the principal: one half to the Institute and one half to five other educational and charitable institutions. This was accomplished in January, 1935.

The reduction in funds (\$81,000) is accounted for by losses taken on the sale of securities which the Finance Committee felt should be eliminated from our holdings because of present conditions or doubtful outlook. To offset this, in part, there were many maturities, calls, and refundings of bonds which produced considerable profit. This profit, together with the amount held in the Endowment Reserve Fund at the beginning of the year, \$526,000, was sufficient to take up these losses and still leave a balance of \$134,000 in the Endowment Reserve Fund. Because of the establishment of this fund, the Treasurer is able to report that no endowment fund on the books of the Institute has at any time been reduced in principal by reason of investment changes or otherwise than by appropriations for specific Institute purposes which are made in accordance with the terms of the various gifts or bequests.

Turning to the list of investments, there have been probably more changes this year than ever before. The record of present holdings shows a marked increase in common stocks which at their market value on June 29 exceeded 36% of the total. This has been increased from 30% since October 1, 1934, and today (October, 1935) is approximately 40%.

The market value of all securities held on June 29, 1935, was 102.5% of their book value with corresponding figures of 93% in 1934, 82% in 1933, 66% in 1932. The Treasurer states that "all book values represent the purchase price or, in the case of gifts or bequests, the market value as of the day received, both subject to the customary premium amortization."

The net yield of all funds of the Institute for the year was 4.65%. This compares with 4.53% a year ago, 4.47% in 1933, and 4.54% in 1932. It should be noted that this covers the *cash income received* during the year and not the exact yield for 365 days on an accrual basis.



*Modeling is an important part of the architectural curriculum at M.I.T. Above and below are two medallions, first worked out in terms of pure geometry, executed by students*

Those with a flair for investment analysis might be interested in the following figures concerning the Institute's pooled investments as of June 29 (all figures at market):

Government and Municipal Bonds.....	6.9%
Industrial Bonds.....	6.3
Industrial Stocks.....	28.0
Public Utility Bonds.....	28.1
Public Utility Stocks.....	3.1
Railroad Bonds.....	18.2
Railroad Stocks.....	2.2
Other Bonds.....	1.5
Other Stocks.....	3.3
Miscellaneous.....	2.4
	<hr/>
	100.0%

And further classified by Moody's Ratings:

Aaa Bonds.....	15.8%
Aa Bonds.....	17.7
A Bonds.....	10.8
Baa Bonds and Stocks.....	28.5
Ba Bonds and Stocks.....	13.5
B Bonds and Stocks.....	2.7
All others, not rated, including real estate and mortgages.....	11.0
	<hr/>
	100.0%

Mr. Hayden, in his report as Chairman of the Technology Loan Fund Committee, shows total subscriptions for five years, \$1,161,720; income for period, \$115,751; profit on securities sold, \$22,874; total, \$1,300,345. The amount remitted to the Institute for loans to students over the five-year period is \$675,700, leaving a balance in the hands of the Committee of \$624,645. The requisitions by the Institute on this Committee for funds for student loans have been sharply reduced, first because

of the lessening demand for loans by students, and secondly on account of principal and interest payments made by students on loans outstanding.

On the Loan Account, the notes receivable now stand at \$719,600 as compared with \$629,150 a year ago. That the Loan Fund has really begun to revolve is evidenced by repayments on principal made by students during the year, \$69,476, as contrasted with \$43,264 the year before. Interest payments totaled \$14,651 against \$9,688 in 1934.

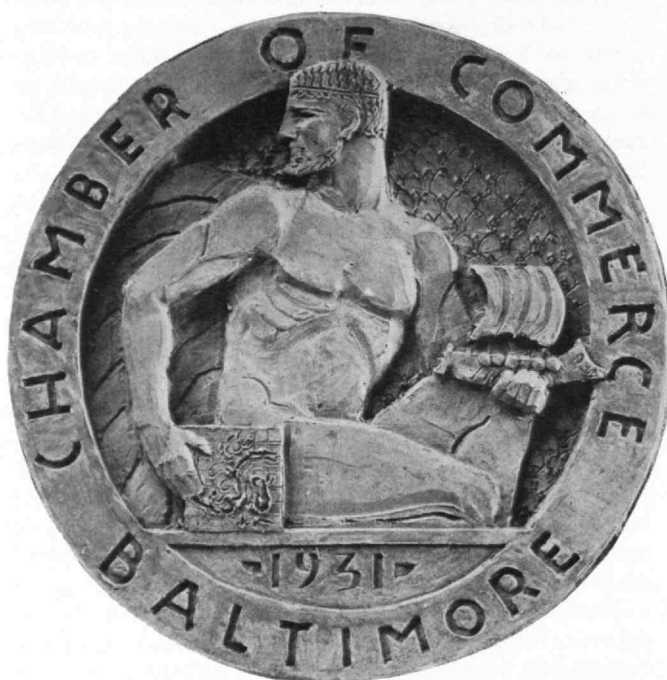
The report of the Trustee of the M.I.T. Pension Association shows a continued healthy growth. The funds in the hands of the trustees now total \$928,194 against \$821,513 a year ago. The market value of the securities held by the trustees (quite apart from the Institute's investments) showed a market value of \$932,760 on a book value of \$898,433. There are now 18 former members of the staff who are receiving pensions under the various plans offered. In accordance with the recommendation of the Faculty Committee which presented the pension plan for consideration in 1926, the Executive Committee has authorized a complete actuarial review of the pension plan in all its phases.

MISCELLANY. Of the total amount received for student tuition \$1,238,000, \$157,000 was from scholarships provided by the Institute funds and \$153,000 by loans from the Technology Loan Fund. The figures for the preceding year were \$134,000 for scholarships and \$207,000 for loans.

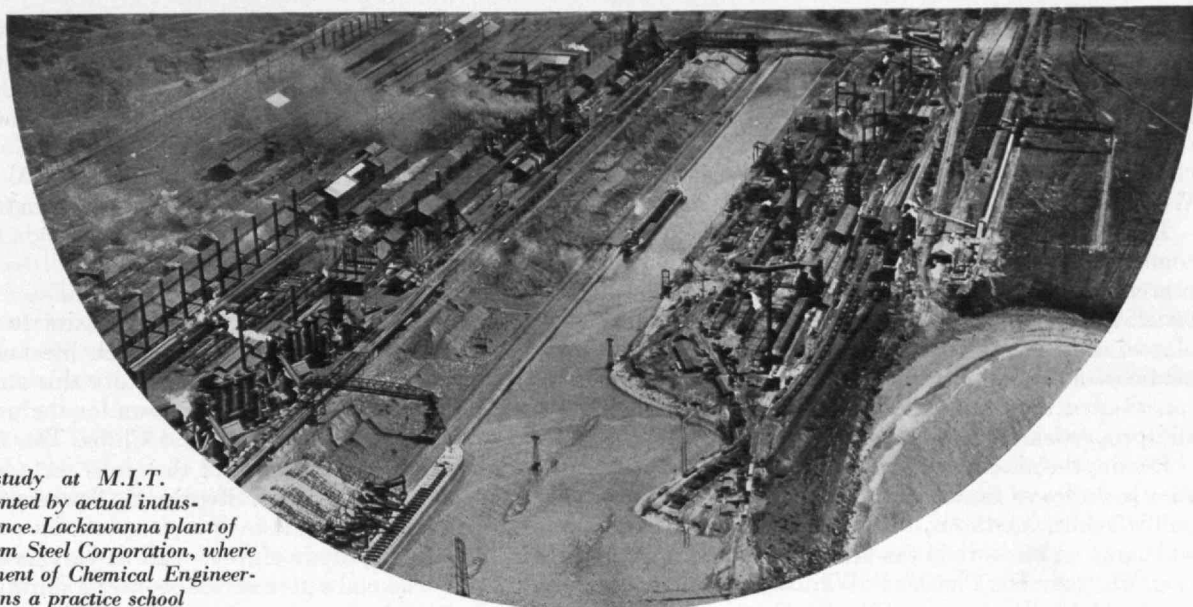
Net income from dormitory operation was \$25,865, almost exactly 2% of the Institute's investment in dormitories.

The Institute's dining service felt the effect of reduced incomes very considerably during the past year and for the first year since 1922 was unable to meet its expenses from its own income or reserve, by \$885.

The cost of operating the power plant for the year was the lowest since 1917, despite a steadily increased draft on the plant for light, heat, and power, due to the







Graduate study at M.I.T. is supplemented by actual industrial experience. Lackawanna plant of the Bethlehem Steel Corporation, where the Department of Chemical Engineering maintains a practice school

addition of new buildings and facilities. The conversion of the plant two years ago from coal to oil burning was due to the initiative of the late Treasurer, Everett Morss, '85, and was the last of the many useful actions taken by him which have led to continuing plant economies.

### Going Up

ALTHOUGH registration will not be completed until November 1, figures compiled as *The Review* goes to press reveal that the Institute's enrollment this year will show an increase over that of a year ago. The figures available at this time show a total enrollment of 2,544, an increase of 59 students over the same time last year. The Graduate Schools, with a total of 517, have increased their registration by 37, with the prospect that the final count will be 535. The freshman class is 568, a gain of 20 students over last year. Of this number more than 250 attended the Institute's tenth annual Freshman Camp, making it the largest in its history. The prospects are that by November 1, Technology's total registration will have slipped over the crest of the 2,600 mark.

The undergraduate dormitories are virtually filled, and Professor Avery A. Ashdown, Master of the Graduate House, reports an impressive waiting list. The Freshman Smoker, most successful of its kind in the memory of the oldest living senior, drew nearly 1,000 first year students and their fathers to Walker Memorial. The program of welcome this year included a dinner, addresses by President Compton, and members of the Faculty and alumni advisory councils, and athletic events in Walker gymnasium. Professor Robert E. Rogers, without whom no freshman smoker would be complete, was toastmaster and entertainer combined.

Not the least significant observation of this year's freshman gathering was the very evident interest and pleasure of the many fathers who eagerly accepted the opportunity to join their sons in the first event of their undergraduate careers.

### New Faces, Promotions

THE Institute begins the academic year with several new members of the Faculty whose appointments were made during the summer. Dr. Ernst A. Hauser, internationally recognized as the leading authority on the technology of rubber and widely known for his research on other colloidal materials, has joined the staff of the Department of Chemical Engineering with the rank of Associate Professor. He lectured at the Institute last winter and from 1928 to 1931 was non-resident Professor of colloid chemistry.

Dr. Hauser received his Doctor's degree from the University of Vienna in 1921. He served as assistant to Professor Max Born at Göttingen, Germany, for a year,



Medal Day at the Franklin Institute, where four Technology men received awards. Left to right, standing: F. Hope-Jones, Henry Ellis Warren, '94, Burt A. Peterson, Robert E. Naumburg, '16, Karl B. McEachron, Dr. James Edmond Shrader, Edmund Bruce, '24, Peter Davey. Left to right, seated: Dr. Louis Bryant Tuckerman, Dr. Francis Ferdinand Lucas, Dr. Albert Einstein, Nathan Hayward, '97 (President of the Franklin Institute), Honorable Frederick Watson, British Consul General in Philadelphia, Dr. Harold L. Hazen, '24

and became first research chemist for the Krause Dried Products Company at Frankfurt am Main in 1922. Dr. Hauser was appointed chief chemist of the Colloid-Chemical Laboratory of Metallgesellschaft A.G. when it was founded in 1925. Since 1933 he has been chief chemist of the "Semperit" Austro-American Rubber Works, Ltd., in Vienna.

His outstanding work on rubber resulted in the first commercial process for concentrating latex, and he pioneered many of the present extensive uses of that material. By combining the ultramicroscope, micromanipulator, and moving picture camera, he showed that the particles of rubber in rubber latex have liquid cores, and contributed important new knowledge of the structure and properties of rubber.

During the absence of Professor Clair E. Turner, '17, who is on leave for a year to make a world survey of public-health methods, three distinguished lecturers will carry on his work in the field of public health education. They are Dr. Charles F. Wilinsky, deputy commissioner of health for the City of Boston; Charles F. Horan, '16, widely known industrial hygienist, and Professor Percy G. Stiles, '97, of the Medical School of Harvard University.

Dr. Wilinsky, who has been a prominent member of the Boston Health Department for more than 25 years, will take charge of the Institute's Course in Public Health Administration. A native of Poland, he was educated at the Baltimore University School of Medicine, and in 1904 entered the practice of medicine in Boston.

Mr. Horan, who will conduct the course in industrial hygiene, has had wide experience in the fields of health protection in industry and the economic aspects of industrial insurance. He was born in Johnstown, Pa., and educated at the University of Pittsburgh, Harvard, and Technology. As hygienist and consultant to numerous corporations, he has been active in the prevention of occupational hazards.

Dr. Stiles will direct the course in personal hygiene, a field of study in which he is nationally eminent. He was graduated from the Institute in 1897, and received his doctorate from Johns Hopkins University. For several years previous to joining the staff of the Harvard Medical School, Dr. Stiles taught at Technology and Simmons College.

The appointment of Dr. Irwin W. Sizer of Bridge-water as instructor in the Department of Biology and Public Health was also announced. He will take the place of Dr. John L. Fuller, who resigned to accept a position at Sarah Lawrence College.

Albert A. Schaefer has been promoted to the rank of Associate Professor in the Department of Business and Engineering Administration. He is a graduate of Phillips Exeter Academy and of Harvard College, where he was a member of the Class of 1906. Three years later the Harvard Law School conferred upon him the degree of Bachelor of Laws. Since 1913 he has been practicing law and has specialized in cases involving commercial problems and the receivership and reorganization of public service and mercantile corporations. He is a member of the American, the Massachusetts, and the Boston Bar Associations.

Dr. Robert N. Sanford, a graduate of Harvard University and a member of the staff of the Harvard Psychological Clinic, has been appointed a lecturer in psychology at the Institute. He has also been on the psychological staff of the Department of Correction of Massachusetts and is a fellow of the General Education Board, being engaged in one of its studies in Cambridge.

## Music Room

AS FURTHER evidence of its desire to encourage cultural activities which enrich life and broaden the scope of education, the Institute this autumn provided a recreation and music room for the use of members of the Combined Musical Clubs. The furnishings of the new headquarters of the clubs includes a grand piano, a gift from Mrs. Stephen S. Townsend.

This activity consists of a glee club, an excellent orchestra and a banjo club, as well as various instrumentalists. The clubs give several concerts during the year, including the very popular Christmas and spring concerts and dances, and also have a number of musical engagements at other colleges near Boston. Not only the students, but the Faculty of the Institute and the public, thoroughly enjoy excellent programs given several times during the winter. The activities of the clubs give students an opportunity to progress in their musical training and to make lasting friendships with others interested in the arts.

The Combined Musical Clubs has the active encouragement of its Alumni Advisory Council, which is composed of Donald G. Robbins, '07, William P. Lowell, Jr., '26, Robert S. Harris, '28, Henry B. Shepard, '16, and Carl W. Gram, '09. To the coach of the Glee Club, William Weston, is due much credit for the excellent singing of the group.

## Visiting Committee Reports

EACH year The Review, at the request of the Corporation, presents summaries of the discussions and transactions of the Departmental Visiting Committees which are playing such an important part in bringing to our curriculum the advice and experience of Alumni and others prominent in those fields for which our departments train men. Below are condensations of the report of the Visiting Committee of the Department of Chemical Engineering and of the report of the Visiting Committee on the Library.

### CHEMICAL ENGINEERING \*

THE steady growth of student enrollment in Chemical Engineering, expressed as a percentage of total Institute enrollment, has made Chemical Engineering the second course in size at the Institute. This is a gratifying indication of the vitality of the Department's educational program. It is noteworthy that the Department's proportion of the total graduate students exceeds its proportion of the total undergraduate body.

\* The Committee members for 1934-1935 were: Bradley Dewey, '09, Chairman, Arthur D. Little, '85, Frank W. Lovejoy, '94, Henry E. Worcester, '97, Samuel Cabot, '09, George H. Taber, Jr., '13, C. M. A. Stine, and M. C. Whitaker.

This is due to the large number of men from other schools who come to the Institute for graduate work in Chemical Engineering and is again a recognition of the professional standing of the Course.

There are strong indications, however, that an increase in the teaching staff in the near future is essential if the quality of instruction is to be maintained. The Research Laboratory of Applied Chemistry, which formerly contributed effectively to the teaching program and handled a considerable thesis load, is no longer in existence, and its assistance to the educational program has been withdrawn. Continued strengthening of graduate courses, which are fundamental to the development of the Department, increased committee activities for the Institute as a whole, and the necessity of broadening the Course to meet new conditions, make new demands which will require an enlarged personnel.

The Committee approves the policy of encouraging research closely allied to industry and consulting work of the type which develops the consultant's professional capacity and enhances his value to the Institute. We feel that such work should be fostered, but it should be so conducted that a man still carries his fair share of the Institute load and that his enthusiasm for teaching is intensified. The capacity of the teaching staff to inspire the student is all important.

Progress of the experimental Honors Group, which was initiated in 1933, is being followed with great interest. The Honors Group consists of six to ten seniors, selected on the basis of professional promise rather than by grades alone, who are relieved of responsibility for work and examinations in their regular scheduled courses in order to allow that freedom and flexibility in their programs which should develop their initiative, their ability to correlate, and their originality. The men of this group are assisted by two of the faculty staff and are given a final comprehensive examination in lieu of examinations in individual courses. The Department feels that the Honors Group experiment well warrants continuance and further development and the Committee concurs in this opinion. We are suggesting that, in an effort to develop the spirit and technique of coöperative effort which is inherent in industrial activity, the supervisors try assigning work to the group as a whole or to sub-groups rather than to individuals. We also feel that every effort should be made to encourage the students to develop facility in the oral as well as written presentation of their ideas.

To the Committee it appears that, though the School of Chemical Engineering Practice, now in its 16th year, is still unique, it has many undeveloped potentialities. It is a valuable feature of the Department's graduate work and we heartily approve the present policy of strengthening contacts between the Practice School stations and the Institute staff, by bringing some of the outside men to Cambridge for occasional periods. Further, we suggest that members of the Cambridge staff frequently visit the stations for at least several days at a time. The full development of the potentialities of the Practice School may well call for further funds.

We feel that efforts should be made to increase the research activities of the Department. These have been seriously curtailed by financial stringency and this year

sees the final liquidation of the Research Laboratory of Applied Chemistry. During its heyday, this laboratory was very active in the development of applied chemistry and was most valuable in training large groups of young men for industrial research and development. Its policy of research, financed largely by short-term contracts with industrial concerns and accompanied by broad and somewhat expensive programs of *pro bono publico* research, was not well adapted to weather the depression. But its outstanding achievements warrant serious attempts to construct a successor which, while avoiding its weaknesses, will fill the gap. A strong core of endowed research, around which the thesis work of the Department could be grouped, and from which there will continually emanate new subjects for thesis work, would perhaps furnish the best nucleus, particularly for graduate students, some of whose time might be spent on the solution of problems of sufficient interest to industry to warrant their financial support by industry. The Department's new Applied Chemistry Laboratory, which is now occupied primarily with instructional and thesis work, could readily be developed along these lines, if and when funds become available.

A vital program of research in applied chemistry seems particularly necessary to the Committee in view of the probable lines along which professional chemical engineering will develop during the next decade. This is especially the case because the purely engineering aspects, which perhaps have contributed largely to the success of our graduates in the past, will undoubtedly be equaled or surpassed in importance in the future by the developments which will be made by those who have mastered these engineering aspects and also possess a broader knowledge of other phases of science. These include organic and general industrial chemistry, as well as the problems of those other engineering sciences which are constantly looking to the chemical engineer for help in the solution of their problems.

The founder of the Institute's Course in Chemical Engineering, as now organized, was the late William H. Walker, whose professional career, characterized by many notable achievements, was an inseparable and integral part of the development of the Chemical Engineering profession and of the Department at the Institute. Your Committee strongly recommends that just as soon as substantial funds are available for the establishment of either new department laboratories or an adequately endowed professorship of Chemical Engineering, his name be so attached to them as to make them a permanent memorial to him.

#### THE LIBRARY \*

IN THIS first report of the Library Committee of the Corporation it seems best to attempt no extensive statement about the library's equipment, management, or needs, but rather to emphasize one special plan and to list only briefly a few of the matters considered by the Committee in this first year of its existence.

A plan that has been under consideration by the Institute's Librarian and by the Committee is the inauguration among the Alumni of a "Friends of the Library

\* The Committee members for 1934-1935 were: Harlow Shapley, Chairman, Walter Humphreys, '97, and Donald G. Robbins, '07.



Association" similar to those in existence at a number of the leading university libraries. Experience has shown elsewhere that an informal organization among institutional friends is an important asset in the growth and the use of special libraries. President Compton has called attention to the possibility that just such an organization might be a special interest and responsibility of the Alumni Association, and, at his request, the Chairman of the Committee presented the plan to the Alumni Council at its meeting of May 27. The President, the Librarian, and the Committee hope that the Executive Committee of the Alumni Council will give full consideration to the possibility of a Friends of the Library Association, inaugurated and sponsored by the Alumni.

The Committee calls attention, without immediate recommendation, to the following points: (1) In its present position, under the poorly ventilated dome, the library is much too little used. We estimate that there would be four times as many visitors to the general library if it were on the ground floor. Future building plans at the Institute should certainly involve a new arrangement for the library. (2) There is an increase in use of the library facilities, especially by graduate students and Faculty. During the past year, the withdrawals (not for overnight only) have increased by nearly 100%. The growth of the departmental libraries, in easily accessible locations, has been a considerable

factor in awakening library consciousness. (3) The Librarian very appropriately suggests the need of a general survey of the function of a library in a large institute of technology: what should be the library's relation to other special libraries of the community; how should it serve its own students and Faculty; what service should it attempt to maintain for engineers of the Boston community or of America. Should the Institute's library aim to develop special fields, to the exclusion of more general collections; and should it aspire to grow into the best and broadest library for engineers in the world. (4) The library budget suffices to maintain the present somewhat restricted services to the Institute. The total annual budget of \$58,000 is not out of proportion; and when any general growth in the Institute is possible, opportunities for the development of the services in the library should be included; because now, more than ever, the emphasis on cultural breadth and on thorough research in the fundamental sciences makes an abundance of books and periodicals indispensable. (5) The Committee would like to see further development of the Walker Memorial Library, in the direction of making standard reference books in all the general courses in the Institute available to undergraduate students. It seems advisable, also, to increase, perhaps by 50% the number of standard treatises now at the disposal of the students in the Craft Library.

## OBJECTIVES OLD AND NEW AT M.I.T.

(Continued from page 58)

2. The organization, environment, and facilities of the Institute have proved themselves favorable for carrying on pioneering developments in applied science.

3. Numerous examples could be cited from past and present experience to demonstrate the advantages in solving baffling technical problems of industry through that type of coöperative effort by specialists in various fields which we have been developing and which our organization of plant and personnel makes possible to an unusual degree. The fields represented and facilities available cover a wider range than those to be found in any other organization, private or governmental, of which I have knowledge.

4. Experience has also established the mutual value of that close articulation of strong groups in pure science and engineering which, again, is a distinctive feature of our Institution. These groups stimulate and assist each other to an extent that I have not seen equalled elsewhere. This is due in part, I believe, to the close physical contact between the groups in our arrangement of laboratories and also to the similarity of basic interests and outlooks of the two groups.

5. Continued from the very beginning of the Institute, there has been a notable record of advisory and often active service to local and national governmental agencies. The contacts, thus established, continually open up new opportunities for service of this type.

All of these features are powerfully directed to our basic objective as set forth in the charter, and in my judgment they represent the lines of public service for whose effective development we should exert every effort and subordinate every other consideration. If this be

true, then certain very definite conclusions follow as to our best procedure.

In the light of this analysis, the statements that we should maintain a staff of high distinction, deal with students of unusual promise, and provide adequate facilities become more than mere generalities; they become definite specifications, as follows:

A. *Selecting Students of Unusual Promise.* We have seen that the unique, unsatisfied demand is not for more scientifically and technically trained men, but for more such men of exceptional value to industry and to the public generally. We should, therefore, make the training of such men our primary educational objective. The first step in doing so is wise selection of students. This selection should be governed not only by the character of the applicants, but also by the consideration of our ability to handle them to best advantage.

We already have a high standard of admission on the basis of scholarship, but I believe that we do not have an equally effective basis of selection on other grounds which are jointly of equal importance in determining a youth's potentialities, such as adaptability, persistence, resourcefulness, coöperativeness, high-mindedness, and so on. These qualities are much harder to evaluate than scholarship, exhibited by grades. No group of men is wise enough to select such qualities infallibly; yet I believe every one conversant with our affairs would agree that we could do a better educational job on this material, and we could turn out a product that would come closer to meeting the most urgent need, men of exceptional value. I should like to see us arrive at the situation in which, far more than now, a diploma from M.I.T. is an unquestioned guarantee of exceptional value; there are now too many exceptions to this ideal.

(Continued on page 66)



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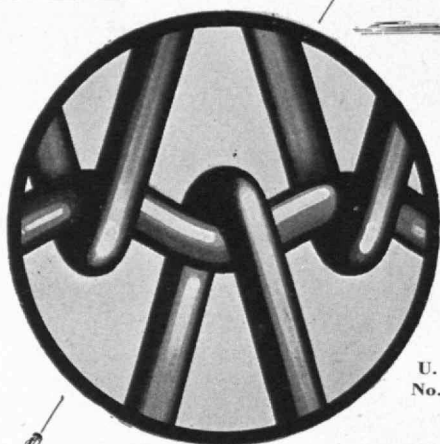
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## OBJECTIVES OLD AND NEW AT M.I.T.

(Continued from page 64)

Approaching this matter from the other angle, two requisites to the most effective training of our students are: first, that their number shall not exceed the maximum number which can be handled most effectively within the limitations of our staff and facilities and, second, that this number shall not fluctuate so greatly as to prevent our maintaining a carefully chosen and trained staff to handle them. Neither of these requisites has been met in the past, for there have been times when we were detrimentally overcrowded, and there have been fluctuations which have required hasty and unsatisfactory arrangements.

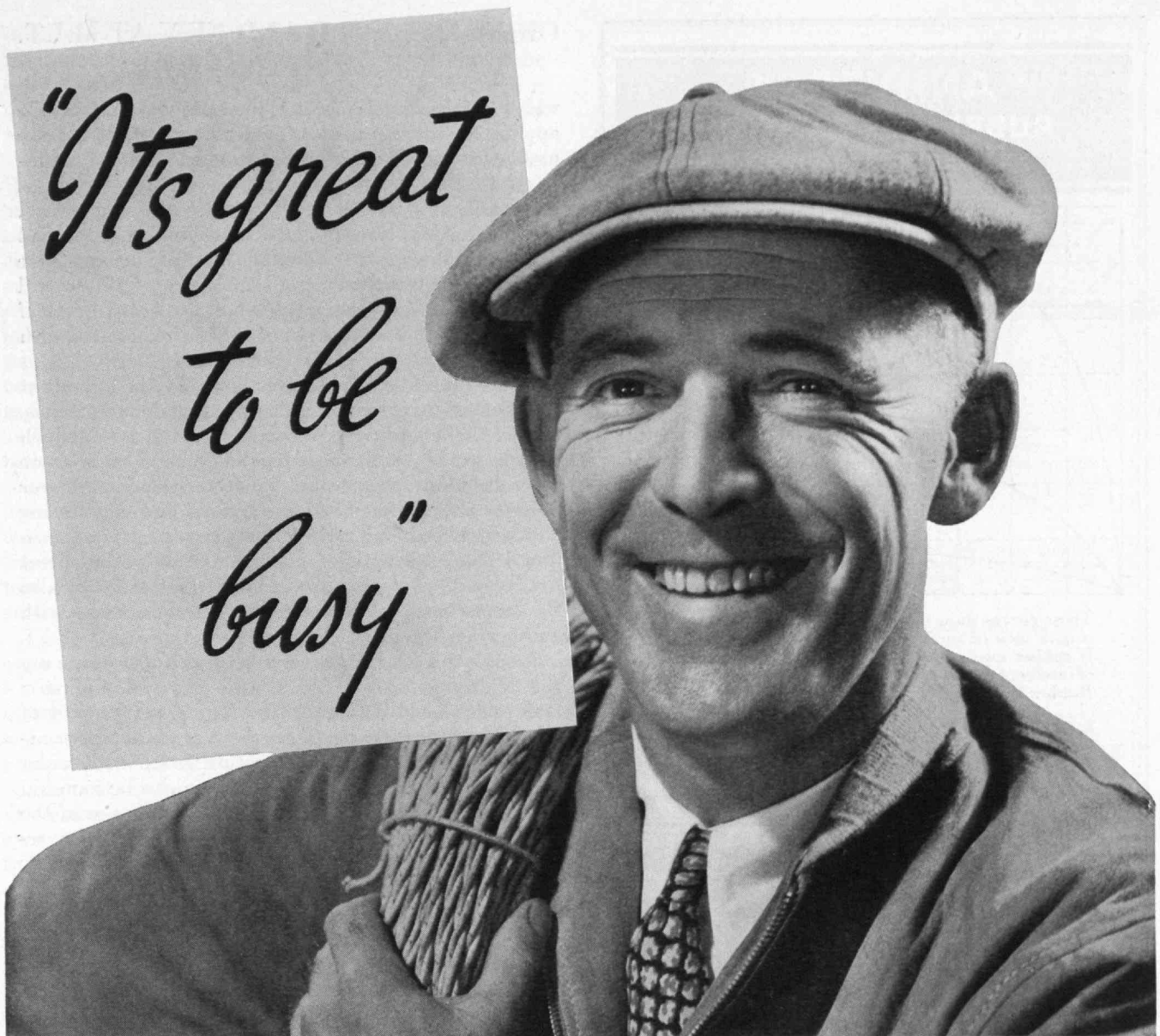
I believe that the key to the handling of these matters so as to produce the desired results is the adoption of a policy of stabilizing student enrollment at a figure shown, by careful analysis, to be the most advantageous figure in the light of our existing facilities of staff and equipment. This figure should be subject to change from time to time in accordance with changing conditions, but should always be determined with the objective of turning out the very finest type of graduate in goodly numbers, but subordinating numbers to quality. The full value of the plan will be realized when the number of applicants exceeds the number which should be admitted, for then the selective process is most effective and the stimulating reaction on those already admitted is powerful.

The proper procedure for administering such a plan for stabilization and selection is fairly clear in principle, but somewhat complicated in detail. I have appointed an excellent committee, headed by Dean Lobdell, to make a careful study of our situation and present a plan for consideration by the Faculty which, if approved by them, will then be submitted to the Executive Committee. This study is well under way and its general features, together with specific details of the first steps to be taken, will undoubtedly come up for consideration early in the current academic year.

B. *Direct Contributions to "the advancement, development, and practical application of science."* In introducing this subject, I make what is perhaps a startling assertion, but it is one which I believe to be demonstrable from a study of the facts. The entire cost of the Massachusetts Institute of Technology in effort and in money, from its beginning, has been amply justified by its direct contributions to public welfare, even if it had never graduated a single student; reciprocally, this cost has also been amply justified by the results of its educational program with students irrespective of the direct contributions of its staff to public welfare. Thus there is a double justification. I am firmly convinced, however, that neither of these aspects of the fulfillment of our charter obligations is possible of best fruition without the accompaniment of the other.

In my Report for 1931-1932, I stated my belief that an urgent need of the Institute is additional endowment of \$5,000,000 to add effectiveness to our research program. After four years of additional observation and study of our situation I still stand by that statement, for I see specific directions in (Continued on page 68)





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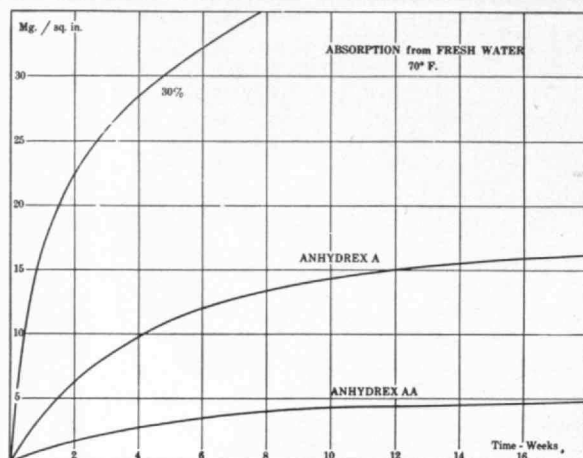
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## OBJECTIVES OLD AND NEW AT M.I.T.

(Continued from page 66)

which the income from such an endowment could be applied to carry on pioneering developments which are now ready to go and which give good promise of important public benefits in health, in solution of serious industrial problems, in development of new industries, and in raising the standard of engineering art and fundamental scientific knowledge. Furthermore, there is every reason for believing that this opportunity will be a continually growing one. I can go into detail if this is desired, though most of you are acquainted with at least some aspects of the situation.

At the present time, however, I should like to present the matter on a somewhat deeper and broader basis, that of the advantages, in line with our charter, which would accrue from an opportunity to pursue more vigorously our program of creative work in all our fields — science, engineering, business and engineering administration, and architecture, including city planning. These advantages include not only the direct public value of the creative work of the staff, but also the educational value to our students of contact with and participation in such work.

Among the elements favorable to such a program are the following: (1) The educational program requires a staff which includes experts in almost every aspect of science and engineering. Thus there is available for attack on any problem a coöperating group with wider range of experience and approach than can be found in any other organization that I know of. Because of the teaching program, therefore, this framework of a research organization is already provided. (2) This fact, combined with tax exemption, makes possible an extraordinary output of research in proportion to overhead costs. We should, therefore, be, and I believe we are, an exceptionally efficient research organization. (3) The nature and ideals of the Institute insure that all such work will be carried on, to the best of our ability, in the public interest. (4) The character and assured permanence of the institution enable it to undertake pioneering and long-range programs which show promise of ultimate public benefit or industrial promise, but which are too long range or embryonic or uncertain as to industrial value to be the proper concern of industrial research laboratories. Here is one of the fields in which the university laboratory has a unique opportunity. (5) To the extent that the staff is engaged upon research, it maintains itself in a state of preparedness to reply effectively to the requests for assistance to municipal, state, and federal agencies. These requests are well-nigh continuous and their execution is a significant portion of the Institute's responsibility. (6) Reciprocally, a staff which is active and alert in handling the live problems of the technological professions is best able to steer its students, as apprentices, into these professions.

So I maintain that an extension of our research program is justified on the grounds of our charter obligations, of its inherent public value, of the efficiency of its performance, and of its favorable reaction on our educational work.

In speaking of the reaction of research on our educa-

tional work, I should like to go one step further. I would like to see research actually made a more important feature of the student's curriculum. At present it is a basic part of our program of postgraduate training, and well approved as such. In our undergraduate course of study it is generally involved only in the senior thesis. It is true that relatively few colleges require any undergraduate thesis at all, and to that extent we are already in an advanced position, but the great pressure to include in the curriculum everything that the young man ought to know tends to crowd out the thesis through lack of time. I believe that our educational effort would be more productive of good results if we reversed this tendency, if we were more willing frankly to admit that our students will still have many things to learn after graduation, which they can learn while on their jobs, and that we had better devote relatively more effort in training them to handle with judgment, skill, and resourcefulness, situations typical of those to be met in high-grade positions in their later careers. In other words, as students mature under our tutelage, we should treat them less and less as sponges or computing automations and more as men with a divine spark of creative genius which we try to discover and fan into a flame.

I am, of course, using the word "research" in a broad sense to signify any attack on a professional problem whose handling calls forth creative effort, and not merely reproduction of some one else's procedure. In my experience as a teacher, no other educational approach compares with this in bringing out those qualities of interest, enthusiasm, and independence which we desire above all else to stimulate. To be successful, however, it must be done well. It is not an approach suited to mass production of graduates or to a mediocre group of students. It requires extraordinary skill and resourcefulness on the part of instructors, a resourcefulness that can exist only if they themselves are active in developing the frontier territory of their profession. It requires a larger staff and more facilities than the mass-production methods of classroom instruction; but I believe that greater emphasis on it than we give at present would pay large dividends on the extra effort and expense involved, and that our charter and our unique position invite us to undertake it.

There is, therefore, urged a more adequate development of our research program along lines that will increase the value of the direct contributions of our staff and that will permeate down into the undergraduate years. In saying this, I do not lose sight of the need of improvement also in the instruction of the lower years, where the pedagogical skill of the teacher must be emphasized in a somewhat different form, and which we should be able to handle without calling on you for help.

To summarize, therefore, I submit to you two recommendations: (1) The adoption of a plan of stabilization of enrollment, designed to improve the selection and the teaching of our students; and (2) better development of our research program designed to improve the training of our students in their upper years and to make more effective our "advancement, development, and practical application of science in connection with arts, agriculture, manufactures, and commerce."

If you approve these recom- (Concluded on page 70)



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## OBJECTIVES OLD AND NEW AT M.I.T.

(Concluded from page 69)

recommendations in principle, the next question will be that of "ways and means." As to the first, we can look to our committee, headed by Dean Lobdell, to submit a plan which will be within our power to carry out. As to the second, we need additional financial resources of considerable magnitude to take the big step in advance which I believe we should take. An endowed research fund, as mentioned before, would be the ideal permanent solution. Temporary funds would afford a temporary solution. At present we are enabled to make some real progress in the desired direction through the generous contributions of our newly formed group of Research Associates. We hope considerably to increase the membership of this group, and its chairman, Mr. Hayden, and I will be grateful for any help that you can give us in securing new contributing members, either individuals or organizations.

In conclusion, my personal message to you at the conclusion of five years of service in this institution is one of gratitude for your continual and unfailing encouragement and support, and of appreciation of the splendid loyalty and ability of our staff — among whom I would acknowledge particular indebtedness to the two who are also members of this Corporation, our Vice-President and our Treasurer.

## AT HOME ABROAD

(Continued from page 56)

could not tack out without fouling, he was quick to decide that we were getting into dangerous shoals and would yell for water. This means that the other boat must let you come about. You have to believe your pilot. It was necessary, however, to remember the place and not sail serenely over the "shoal" on the second round.

At the end of this series we were pleased with ourselves and proud of *Yankee*. In the six races sailed after adopting the new tactics, we had four firsts, a second, and a fiasco. We had, however, a healthy respect for the two weeks in the Solent, still ahead of us. Sixteen days intervened. During this interval, we took our modest part in the Naval Review and got a new mainsail fitted.

The next series opened with a good breeze and we won, with nearly ten minutes to spare. This marked the high spot of the season. To understand the difficulties which followed will require a description of the conditions we were to meet.

Racing in the Solent is something between a game of chess and comic opera. The Solent is the name given to the body of water which lies between the Isle of Wight and the south coast of England. It is about 30 miles long and two miles wide with a 30-degree bend in the middle, Cowes being at the turn. There are many shoals, most of them navigable with the centerboard up. The tides are generally strong; their time of turn depends on the wind and the distance from shore. There is frequently a difference of an hour between times of turn at the shore and in the middle. In the light air that

prevailed last summer, the strength and direction of the wind tended to have a rather steep gradient both horizontally and vertically — not to speak of variations with time.

There was, however, a fairly constant tendency for the breeze to come in from both ends of the Solent, leaving a region off Cowes with no horizontal component. A little arithmetic will serve to show the peculiar tactics which Solent racing has developed. A boat going through the water at four knots against a three-and-a-half knot tide has a net speed of one-half knot. If, by going somewhere else, a tide of only two knots is encountered, the net speed is increased by a factor of four. It may, therefore, pay to pick a course which appears to be four times longer than the direct line between marks. Even with a favorable tide, it frequently pays to go off the course to find a stronger current. Frequently, it is impossible to stem the tide. It is then necessary to anchor till the breeze comes up or the tide slacks. It is the job of the navigator to watch the shore through glasses, sometimes by the hour, to make sure there is a component of velocity in the right direction.

A second difficulty in these races is that there are large fleets of smaller boats racing on other courses. There is always a probability that two fleets will converge during a race and it is not a simple matter for yachts of widely different sizes to apply the rules of right of way. Add to this the blanketing effects of large yachts and battleships at anchor, not to speak of liners barging in and out of Southampton, and you have a rough idea of Solent races.

It is practically essential to carry a pilot with local knowledge in these races. We were fortunate in having a man who knew the waters like the palm of his hand. At any time he could tell us, without taking soundings, when the centerboard should come up and when we must tack or change our course. On one occasion, it was to our advantage to sail as close to the Isle of Wight as we possibly could. After studying the chart and our drift, we decided we were safe on a certain course. Not so the pilot! He got more and more excited and finally said we could not go even so far as a small yacht just ahead. At that instant, the small yacht rose about two feet out of water. We tacked in record time and thereafter listened carefully to the pilot.

The race on the original America's Cup course, round the Isle of Wight, was a great disappointment to us, but there were amusing incidents. We had a beat to windward to the southeastern corner, after that, reaches and runs. The boat refused to go to windward that day for reasons still unknown. We were actually next to last boat at the windward corner. After 30 miles of reaching, we entered the Needles Channel, a scant two lengths behind *Britannia*, having passed only *Shamrock*. The leaders were well ahead. The king was aboard *Britannia* that day — in fact, every day of this series. We had a fine opportunity to cut in when rounding a channel buoy, but decided it would not be polite. We did get ahead for a few minutes, but were soon blanketed and fell back. Finally, we settled down on a long, broad reach against the tide on a course just to leeward of *Britannia*. *Yankee* decided to (Concluded on page 72)

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## AT HOME ABROAD

(Concluded from page 70)

make up for her early bad behavior and actually sailed through her lee at close quarters. I have never seen this feat accomplished before, but anything is possible in the Solent.

After our first win in this series, there were five or six races in a row in which we could not finish better than fourth. These were all sailed in light, variable breezes, and it is difficult to keep them separate in retrospect.

The technique of starting in a strong tide with no wind was of considerable interest to us. Under these conditions, the start is always with the tide, in order to clear the line for the next class. About 20 minutes before the gun, the boats pick a position and drop a light anchor up tide from the line. The most successful procedure is to let out about a hundred fathoms of line; sometimes an old mainsheet is hitched on to the regular line. This drops the boat well below the starting line. Enough time is allowed to make sure that the anchor is holding well. About two minutes before the start, all hands begin pulling gently but with uniform acceleration, until the anchor comes in. This brings the boat on the right side of the line and gives her enough way to turn and cross, while still moving through the water. It requires nice timing. It is worth while to travel many miles just to see eight \* J boats at anchor with motionless sails, headed in the wrong direction, waiting for the moment to start heaving.

On account of irregularities in current strength, the boats would spread out soon after the start. After a time, one would catch a breath of air and sail merrily into an increasing breeze. She might be a mile away before the last boat got going. However, at the outer mark, the first boat would have to stem the tide while the others came up with it, and the fleet would be bunched again. On the return, the trick is to "cheat" or "shun" the tide by sailing as close to shore as the pilot lets you. Whichever shore the leaders elect to try, there will be one or more boats which take a loser's chance on the other. There appeared to be no data on which to base a choice, but two of the fleet, *Endeavour* and *Astra*, were almost invariably right. *Yankee* was never right when taking a loser's chance. Coming back past Cowes, the ground rules required that we pass between two buoys about a hundred yards apart. One of these was a turning mark for the smaller boats. As it was in this region where the wind had no horizontal component, a collision would not have been serious, but it frequently seemed inevitable. Next, the wind would come in from the other direction, and the procedure would be repeated at the other end of the Solent.

In the last four races of this series the breeze was somewhat better, and we had learned a few things. We got a first, two seconds, and a third.

The season was finished with races in or near Torbay, almost back to Plymouth, with one race at Weymouth *en route*. Scenically, this series was remarkable, and socially it was outstanding. For the most part, however, the wind distribution was so fantastic that the results

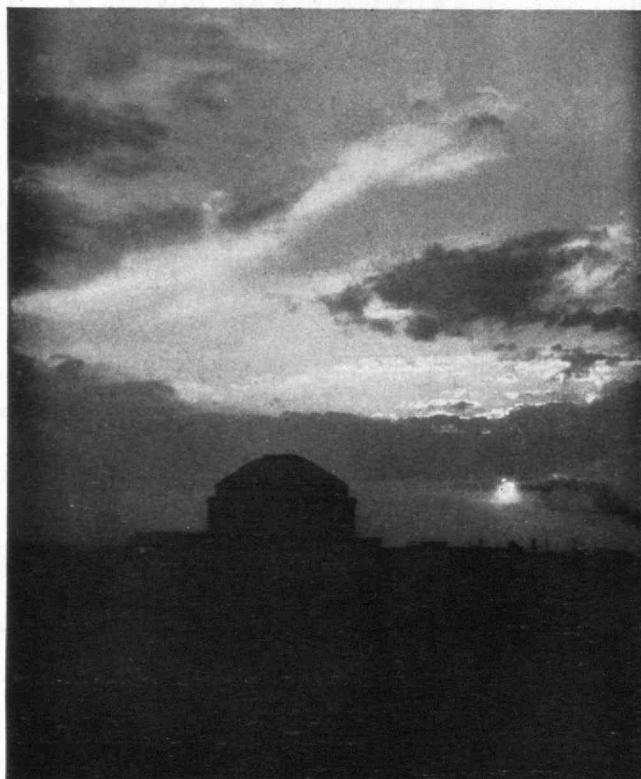
of the races were nearly pure chance. There was one occasion when five boats, all within a half a mile, were sailing the same course on five different points of sailing. The wind, for the most part, was full of holes, and it was not unusual for one or two boats to be becalmed for 10 minutes or more.

We did win one race in a nice breeze. In two other races, when the wind was moderate, we lost by forcing another boat into a favorable wind shift by smart maneuvers on our part.

In the 32 races we started during the season, *Endeavour* won nine, *Yankee*, eight, *Astra* seven, *Velsheda*, five, *Candida*, one, and *Westward*, one. The last race was unfinished since the three boats that started with us withdrew when our mast went over the side.

Judging by these figures alone, our performance was good but not impressive. The record looks much better when the weather conditions are considered. We always won when the wind was reasonably steady. Frank Paine designed the *Yankee* on the theory that a good all-weather racing boat rated under the Universal Rule should be as long as the rule permits. This means that the boat must be much heavier than is usual. Mr. Sopwith recently ordered a new boat to be designed, specifying that the length and weight should be just about the same as *Yankee's*.

Entirely apart from racing results, the season was decidedly successful. Commodore Lambert took *Yankee* to England simply because he wanted to spend a season racing with the English yachts. If the United States had wished to send a yachting ambassador to England, it could not have picked a better man for the job. His seamanship and sportsmanship won admiration and his wonderfully genial personality, many friends.



"When Night Broods on the River  
... And the Courts of M.I.T."

\*This is a record number in this class. The eighth was the schooner *Westward* that raced in this class only during this series.



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27 Asst Prof M I T  
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—Charles Anderson 87 V Lawyer 24 Milk St  
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—Kenneth Whipple 25 II SB Malden Gas &  
Elec Co 157 Pleasant St Malden  
—Mary Esther 24 200 Clifton St Malden  
—Philip Berkeley 28 II SB Distribution Engr  
Malden Elec Co 157 Pleasant St Malden  
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George Frank 86  
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**RHODES**  
Frederick Leland 92  
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Calvin Winsor 90  
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Harry Jonathan 96  
William Jackson 95  
**RICH**  
Charles Edward 83  
Charles Leon 76  
Isaac 78  
James Rogers 71  
William James 84  
**RICHARDS**  
Alexander Webster 04  
George William 12  
Mrs Robert H 73  
William Reuben 01

*Class—Living*

**1905**  
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Abbott F H  
Adams C R  
Adams C W  
Allen C  
Allen E G  
Allen R H  
Amberg A J  
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Andrews F H  
Armstrong A C  
Astell G B  
Atwood C E  
Atwood H N  
Ayer J  
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## THE ORIGINS OF ENGINEERING

(Continued from page 53)

Agriculture led to the production of machines to aid in the cultivation and in the preparation of its products.

A simple beginning of such machines might be machines for winnowing and grinding grain, very rude ones at first but gradually taking improved and more complex forms. It may be presumed that winnowing was originally carried on by the manual process of tossing the grain and chaff of the threshing floor into the air and allowing the natural breeze to make the separation. This process may still be seen in many parts of the world, as, for example, in Algeria, where it may be observed in practice alongside of the operation of modern combine harvesters. The winnowing van is known to have been used in China in very early times, and perhaps also in Japan, where it still may be seen in elementary forms used in the rice fields along with hand fans.

Crude plows drawn by bullocks are known to have been in use some 2,000 years earlier than the period when (as Byron puts it) "the Assyrian came down like the wolf on the fold" at Jerusalem some 700 years before the Christian Era.

The shadoof, or hand-operated well sweep, was used in Egypt more than 3,500 years ago. Ropes and pulleys were used for raising water from wells before the date of historical records. Perhaps animals such as bullocks were applied as motive power where agricultural irrigation was the purpose, much in the manner still widely used in India. Apparently the treadwheel applied to raising water for use on the land (which is still to be seen in China) also was used in prehistoric times. The treadwheel seems to have been followed by the noria in which the flowing stream impinging on peripheral paddles causes the rotation of the wheel instead of using man or beast on the treadwheel. The so-called Persian wheel, also of great antiquity, is apparently an improved offshoot of the noria. The picotah, on which a man or beast traveled on the tilting lever, made an advance on the shadoof where continuous operation was a need. The chain of buckets for raising water from a well also apparently comes down from primitive man, and likewise the simple chain pump.

Raising water from wells for irrigation purposes was a highly important act in many regions occupied by man even in prehistoric time and also in the early periods of history, as it is now in some regions such as our own southern California and in India. How far into antiquity the atmospheric or suction pump goes is obscure, but apparently the qualities of the siphon were known as far back as 1,500 years before Christ. Out of the water situation may have grown other devices. For example, syringes perhaps grew out of efforts to adapt bellows (possibly of a plunger type) to use with water. The plunger churn, the origin of which goes very far back, may have similar roots.

It is to be borne in mind that in the earlier days of the Paleolithic Age, esthetics, art, and creative endeavor had not stirred appreciably in the intellect of man. The efforts for securing shelter and bare subsistence were

sufficiently exacting to occupy fully the intellectual possibilities of mankind. Whatever effort of invention was forthcoming was to abate nuisance, reduce required muscular effort, or conduce to safety.

It is now appropriate to seek the origins of engineering which have arisen and are arising through trade and transportation. Sailing and rowing ships are of great antiquity. Archaeological remains indicate that there were ships on the Tigris and Euphrates 4,000 years before the Christian Era. Development of harbors was a gradual outcome of commercial trade carried on by water. It is impossible to say when formal highways (as distinguished from mere trails) were first constructed and maintained, but the date apparently should be assigned to lesser antiquity than hydraulic works. Bridges naturally followed with formally constructed roads. Indeed, in some instances, the bridges have been more permanent than the roads, as is illustrated by certain ancient examples in China. A modern instance where sound economic reasoning leads to like results is to be observed in Turkey, where permanent bridges are being established over some of the rivers, although the money is not yet available to convert the old, part-year cart roads into satisfactory automobile highways. This is for the purpose of making the present roads available for traffic in certain seasons when rivers are in spate and still have adequate bridges in place when the roads have been rebuilt.

The seeds of civilization were sown when men who possessed like objectives first purposefully gathered together in communities. Those seeds germinated and the tree of civilization flourished and grew in influence as engineering expanded in scope and competent means for intercontact between the communities increased. While the horse continued to be the most serviceable message runner, burden bearer, and draft animal, moderns had but little advantage over the ancients. Differences between specific earth roads and differences between strains of horses were but moderate differences between likes. Water-borne trade provided a difference in kind which profoundly affected ancient peoples. Equally, heat-power motive devices profoundly distinguish our period from the conditions of a few centuries ago. While the invention of the wheel is lost in the dark of prehistoric time and the runner and courier as messengers of communication go back as far as we know, our own methods of transportation by heat-power on land, water, and in the air and our methods of communication by electricity are recent revolutions that have introduced extraordinary economic changes. Stationary steam power and formally established factories alone would not have done so.

Ethnologists tell us that a common language is not necessary for family life and relations. This may be true; each one can find out by trying it on her husband or his wife; but, broadly speaking, a common language is needed for relations in a community of many individuals. The need is also particularly felt in the casual contacts by individuals made in commercial trade. Organized language must have greatly facilitated and increased trade, and thus the germs of ship engineering, harbor engineering, and production engineering were fertilized to further growth by those who felt advantage

for themselves to be derivable from the growth of trade. Community concentration also became more notable as a consequence of the trade growth.

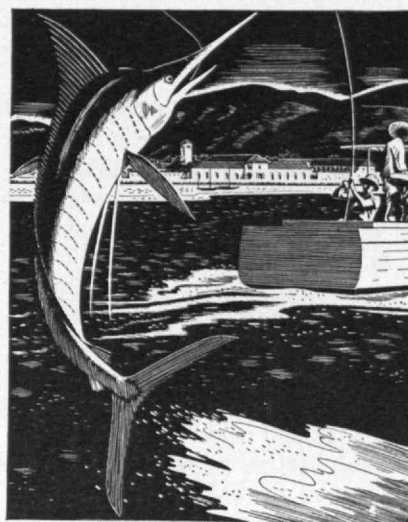
An emphatic demand for engineering structures and machines followed in the wake of community concentration. A convenient water supply for man and beast came into demand. Removal of offal became a necessary sanitary convenience. Better roadways were demanded so as to meet the convenience of the many citizens. Surveys of land boundaries were contributory to preserving order. Engineering experience and skill came under constant requisition and were enlarged by practice. The results of improved engineering skill made concentrated populations less uncomfortable, with a reflex result that urban populations continued to concentrate. City planning seems to be a very old profession. It goes back at least 3,000 years in the East, and it still is adding new facets because of new discoveries in science and political economy in the West.

Inventions of structures or machines arise from applications of the mind to conceiving measures for modifying an existing situation or creating a new one. The practice of invention, therefore, is subsequent in time to the development of reasoning powers in man and co-ordinate with the applications of mind to social organization. Social organization proceeds hand in hand with scientific discovery and invention, although the former may at times seem less lively in its forward steps than the latter. Invention also involves experimentation by which the conception is built up into a physical embodiment. Moreover, it involves the intellectual courage required to try again when a first embodiment has failed, and to try still again and again, if need be, after thoroughly reviewing and verifying the reasonableness of the conception. With the main stem of the human race reaching back a quarter of a million years and brain volume as large as modern man's going back at least several tens of thousands of years, as anthropologists seem to have shown convincingly, there has been a long time for the more mentally active men who hated inconvenience to exert themselves in invention, but the early steps were founded on little experience and were crude. Full stride has only been reached in modern centuries. But through it all, the inventors of these improvements used intelligence to save exertion of muscles.

The very early period in which the urge of convenience affected at least a few of the human race is seen in a few flint implements or tools of a thousand centuries ago, which were chipped to fit the using hand, although the proportion of early tools so fitted proves to be small. In contrast, a very modern illustration of man's propensity to shift muscular labor onto the machines comes from our American use of the automobile. Before the citizens of rural regions became addicted to automobiles, the rough-surfaced and rutted roads wound around the hills with curves and grades over which draft animals picked their way without much exertion of physical effort being required of their leisurely or somnolent drivers. Driving an automobile over these roads required continuous exertion of muscular effort. With the advent of automobiles as a rural transportation agency, a wide demand arose for the (Continued on page 76)

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## THE ORIGINS OF ENGINEERING

(Continued from page 75)

abatement of this muscular effort. By the intervention, therefore, of steam shovels, scrapers, and steam rollers, the hills have been cut through, the routes straightened, and the surfaces made smooth so that drivers may tool along at ease.

Division of manual labor in the sense that Adam Smith used the term was not new in his generation, but had existed over a long period of time. He brought it formally to the intellectual consciousness of scholars. Division of labor still exists and presumably will exist as long as man is called upon to do either manual or mental labor. The thing that is new in our day is *adaptation of labor* to the conditions wherein machines are used to shift the heavy labor from the muscles of individual man. Along with this adaptation goes a greater emphasis on intellectual power, and hence the origination of still further features of engineering. With the increasing emphasis on intellectual power, there also has arisen a joy of achievement available to each individual which transcends the simple grubbing after food and other keep.

In war, necessity perhaps is the mother of invention, with the object of self-protection, as in the production of weapons or planning fortifications; but in pacific life the craving for relief for the muscles and for leisure free from heavy labor has been the stimulus for active-minded men to make the revolutionary, basic inventions. It was not necessity that drove Watt's engineering mind

to the steam engine, or George Stephenson's to the steam railroad, or Fulton's to the steamboat, and so on, for the series of primary inventions. Even the easiest, and therefore ranked as best, methods of hunting and fishing probably were invented by relatively active-minded men anxious to secure their food with greater ease.

Since the middle of the Nineteenth Century, for the first time in the world's history, we of the western world have been in command of knowledge, skill, and natural resources sufficient to produce comfort and satisfaction for everyone. Our deficiency is lack of effectiveness in our applications of knowledge and skill. This is a conjoint problem of political economy with engineering and opens up possibilities of new threads for engineering. Indeed, every newly discovered fact in science or political economy may disclose the origin of a new thread in the fabric of engineering. That aspect of engineering which primarily arises from a recognition that the dignity and power of the human mind makes it appropriate to relieve man labor by machine labor in drudgery is only now crossing the threshold of its origin. This aspect requires for its correct development all of the facts that can be discovered in political economy, just as the older aspects of engineering have needed and have utilized all of the facts available from the discoveries in natural sciences.

The solution of the conjoint problem of engineering and political economy which is required to provide for men the craved advantages of convenience and leisure can only be secured by applying the same exacting, unremitting, and critical research as has characterized the unfolding of physical science. Much reflection on the question as to where such research can be established, with firm expectation that results suitable to the conditions in this country may be realized, leads me to the answer that the engineering faculties of the educational institutions of the country will have to be relied on. If we, in this country, are to enlarge and to distribute our comforts and conveniences more uniformly, we must rely on ourselves for developing sound tenets of

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political economy, extending scientific research, encouraging invention, and improving conditions for the production of industrial and agricultural commodities.

We treat our machines with the same lack of consideration and manners as we exhibit toward fellow men. Millenniums of experience with domestic animals have taught the human race that considerate use of such animals contributes to their safe serviceableness for their masters and avoids injury to neighbors; but bulky and elaborate machines are relatively new to human generations, and experience has not yet borne in upon man the most economical and fruitful manner of using his machine creatures. Some guiding restraints are needed here, so as to avoid certain social disadvantages. The use of machinery obviously has forced a degree of mitigation of the *laissez-faire* philosophy of Adam Smith, Ricardo, and John Stuart Mill, with its bitter "hire-and-fire" policy, but this is not sufficient to meet all the needs. We cannot afford to retard the further development of engineering; but the results of untamed scientific discovery and invention must not be allowed to bear with cruelty on individuals or communities. The nation now seems conscious of the latter truth, but it will require some legislative procedure before the desirable end can be secured, and this procedure needs guidance by the ripened intelligences of those who are experienced with the control of machines and structures.

The growth of civilization goes hand in hand with adventure of the mind, just as advance of science is a child of the spirit of inquiry. Thus civilization and

science have a bond of romance, and engineering is an agent by which civilization profits from science. Civilization connotes harmonious coöperation of many human beings, and also mutually sympathetic, helpful, and elevated relationships. Civilization expands with the engineering arts because the latter enable groups of people to become closely associated without sacrificing either convenience or major comforts. Only preventive medicine can vie with engineering in importance to civilization; but medicine is a later flower borne on the branches, rather than a root of civilization.

Like a banyan tree, civilization profits from additional roots as it becomes more and more effectively spread, and the origins of new aspects of engineering are continually arising from the new roots. The primary engineering inventions of great influence on civilization which have originated in the last century and a half include no less a series than adaptation of steam power to general use, steam-power transportation by land and water, automobiles associated with hard-surfaced roads, electric-power generation and distribution, artificial lighting by electricity, electric communication by telegraph and telephone, air navigation, chemical production on factory scale, adaptation of mineral fuels to general use. These by no means exhaust the possibilities, and new origins of engineering may reside in each new discovery in natural science and almost surely will be found to reside in each new proved tenet of political economy.

Inventions of tens of centuries (*Concluded on page 78*)

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## THE ORIGINS OF ENGINEERING

*(Concluded from page 77)*

back were, for their day, of corresponding influence on the then civilization as are the inventions of our day on our civilization. Witness the Roman roads which tied Western Europe together by one transportation network. Modern automobiles and associated hard-surfaced roads, while similar in some aspects, are so different in conception from anything within the reflections of a Roman leader that this modern development must be ascribed to its own modern origin. The outcome of some of the modern origins of engineering is nowhere seen more strikingly than in household affairs. Instead of skinning (by the exertion of main strength aided with crude tools made of chipped stone) the wild boar brought in on the back of her brute of a man, and burning the laboriously recovered meat over the open fire at the mouth of her cave, the woman of the dwelling now preserves her cherished rugs by passes of the vacuum cleaner, supervises the electric sewing machine, the electric washing machine, the electric mangle, and sets the temperature regulator for the oven of the gas or electric cooking range. Thus, the practicable life of the housekeeper has been revolutionized as an outcome of scientific discovery and invention and become one of light but highly skilled labor associated with physical and mental freedom and available time for reflection, recreation, and, not uncommonly, for special service to society. Another homely but graphic example which serves to illustrate changes in only 50 years that have resulted from engineering of modern origins is the group of automobiles quiescently awaiting their worshipping masters around the country churches of a Sunday, where horses (with their buggies) formerly stood in fly-pestered impatience.

It is my hope that the foregoing sketch has convinced you that the origins of engineering lie in man's knowledge of the forces of nature and their application to man's convenience. Each fact discovered regarding those natural forces carries its own possibilities of useful application, and as the facts have been detected and identified with the course of time, the scope of engineering has been correspondingly widened until it now possesses a very comprehensive influence on human life.

Man wishes to secure protection from the weather (that is, shelter and clothing), plenty of satisfactory food, safety for his person, sociable contact with his kind, and comfort in all of his affairs. Engineering contributes to satisfying all of these desires. It is worthy of the fullest development for the purpose of enlarging this influence. As science discloses the facts, engineering is able more fully to meet these desires in substantial degree for everyone. Engineering is thus an inextricable thread in the fabric of the civilized world's social organization. Natural phenomena are not all understood; the facts have not yet all been observed, and new ones are detected from day to day. Out of each one of these may spring new origins for engineering processes, and the scope of engineering may be expected to expand as long as man remains mentally investigative and corporally fond of convenience.



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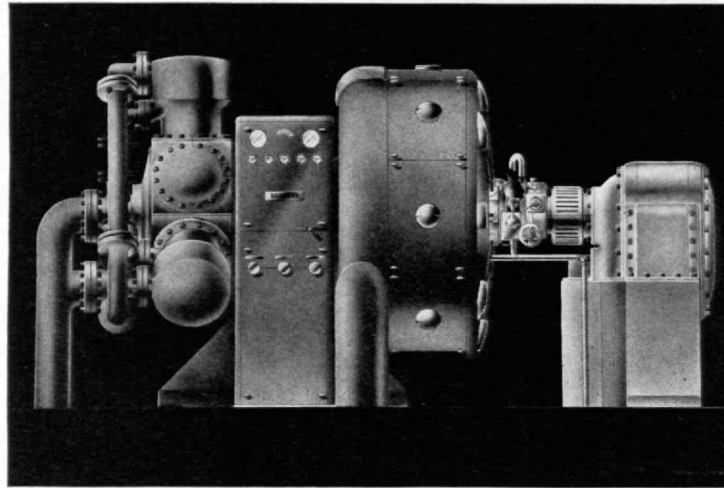
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# TECHNOLOGY MEN IN ACTION

CHECK-LIST OF THE ACTIVITIES AND ACHIEVEMENTS OF M.I.T. ALUMNI, OFFICERS, AND STUDENTS

## In the News

¶ KARL T. COMPTON, on expressing his opinion against the pooled unemployment insurance plan passed by the Massachusetts House recently. He recommended: Unemployment reserves maintained by each plant separately, the costs determined by the degree of stability each concern could maintain. Dr. Compton and FREDERIC H. FAY '93 have been named members of the new State Planning Board, by Governor Curley.

¶ ANNA B. GALLUP '01, on the enlargement of the Brooklyn Children's Museum, of which she is curator-in-chief. An account of her career appears in the Brooklyn *Daily Eagle* for September 15. In the 33 years Miss Gallup has been with the museum, she has taken but three leaves of absence. The first, in 1904, she toured the museums of Europe, studying 28 in four months. Return visits were paid by the director of the National Museum of Cardiff, Wales, and the keeper of geology in the British Museum, who publicized her work in periodicals circulated through the Empire. The second trip was to Bermuda, with a group of college professors and government scientists, to collect the flora and fauna of the coral reefs. The third trip was to help establish a similar museum in Indianapolis. Her work attracts the attention of progressive educators from all civilized countries and has been viewed by representatives from Iceland, the Argentine, China, Australia, and New Zealand. In 1930 Miss Gallup was awarded a gold medal for her outstanding contribution to humanity.

¶ MICHAEL J. AHERN, S.J., '06, on the 25th anniversary of his ordination to the priesthood. His friends will present a seismological station to Weston College, where he is Head of the Departments of Chemistry and Geology. Formal observance of the anniversary will take place in Symphony Hall, October 20. Father Ahern is consulting editor of the Universal Knowledge Encyclopedia and he is widely known as a lecturer. A member of the American Chemical Society, he represents it as councillor and as director of radio broadcasting of the Northeastern Section. He is also a member of the Geological Society

of Boston, of which he has twice been Vice-President; a fellow of the American Geological Society, a member of the Boston Society of Natural History, the Buffalo (N. Y.) Society of Natural Sciences, the Seismological Society of America, and the American Association of Variable Star Observers.

¶ FRANK W. CALDWELL '12, JEROME C. HUNSAKER '12, and GEORGE J. MEAD '16, a feature article in the Boston *Globe* in September, describing their work in making airplanes and improving them. "What goes on here (George Mead's laboratory) is aviation two or three years hence," said Professor Hunsaker.

¶ HARRISON P. EDDY, JR., '17, for his activities as President of the Society of Municipal Engineers.

¶ CLAIR E. TURNER '17, now on a trip around the world studying health education, on his appointment by Calcutta University, India, to deliver a course of six lectures on health education.

¶ FAY S. LINCOLN '22, for an exhibition of photography at the Rabinovitch Gallery, New York City, October 4 to 17. Says A. Lawrence Kocher of this exhibit:

"The work of F. S. Lincoln combines, with notable success, technical facility and a clear and forcible record of his subjects. . . . Details are frankly reported as they appear in brilliant light, reproducing surfaces imbued with atmosphere and expression."

¶ ERIC HODGINS '22, on becoming managing editor of *Fortune*. An associate editor of that magazine for the past two years, Mr. Hodgins was formerly associate editor of *Red Book* and also served as editor of *Youth's Companion* and managing editor of *The Review*. In collaboration with F. ALEXANDER MAGOUN '18, he wrote three books: "Behemoth: The Story of Power," "A History of Aircraft," and "Sky High."

¶ F. LESLIE FORD '24, on receiving the bronze medal awarded by *Good Housekeeping* in its national contest for the best exterior remodeling work in Massachusetts. The contest had a two-fold purpose: first, to cooperate with the Government in its national housing movement by stimulating interest in remodeling; second, to show how successfully the old-

fashioned type of building can be altered at moderate cost to meet present-day standards.

¶ AVERY A. MORTON '24, DANIEL B. CLAPP, Chemistry Department, M.I.T., and CHARLES F. BRANCH, for their discovery that two new substances seemingly produce cancer. The discovery was announced in *Science*, journal of the A.A.A.S. They now seek to find what portion of the molecule is responsible for the production of cancer.

¶ ALLYN B. WHITE '35, as assistant on the research ship *Atlantis* of the Oceanographic Institute, Woods Hole, Mass., which is headed for Newfoundland to study the currents and chemical changes of the ocean. Professor GEORGE OWEN '94 designed the *Atlantis*.

## Written

¶ By ALBERT SAUVEUR '89, a fourth edition of "The Metallography and Heat Treatment of Iron and Steel," McGraw-Hill.

¶ By FREDERICK G. CLAPP '01, a pamphlet on "Safety of Water-Flooding Pressures at Bradford, Pennsylvania," reprinted from the *Bulletin* of the American Association of Petroleum Geologists, June, 1935.

¶ By ROBERT S. WILLIAMS '02, and VICTOR O. HOMERBERG '21, a third edition of "Principles of Metallography," McGraw-Hill.

¶ By CHARLES H. PORTER '02 and WYMAN P. FISKE, both professors in the Department of Economics, M.I.T., a book on corporation accounting. In addition to the usual technical material which the would-be professional accountant requires, the authors have also included a number of chapters on financial problems that the average investor could study to advantage.

¶ By STUART CHASE '10, a book entitled "Government in Business," Macmillan.

¶ By EDWARD P. WARNER '17, a contribution to "The Anniversary Postbag" in *The Yale Review*, 25th anniversary number, autumn, 1935, on the past 25 years of aviation, which "span the evolution of aircraft from the first timid emergence from the shell of pure experimentation to the attainment of full recognition as a normal part of a world transport system. It is almost exactly



a quarter of a century since a Postmaster-General first proposed to the Congress the possible desirability of using aircraft for the transport of mails. It is almost exactly a quarter of a century, too, since the first 'scheduled passenger air line' began operations over a route four miles long. . . .

To look forward to the next 25 years, or even a fraction of the period, is to look through a period of reversing trend and of gradually rising importance of operating experience in engineering. So brief a letter offers no space for mathematical proofs, but proofs could readily be given that research after improved efficiency in the present type of aircraft has reached the stage of rapidly diminishing returns and that physical law which has remained unmodified since long before Orville Wright first flew is setting up positive barriers that are already being closely approached. The major hopes of improvement for air transport lie in improved engines, which confront no such specific physical limitations, in simplification of structures and reduction of their weight, and in the lowering of the costs of upkeep. Air transport in 1950 may move a third faster than in 1935, or it is equally possible that the increase in its speed will be negligible, but its cost of operation ought to be down by a third or more. The volume of its operations will depend on the course of government policy, completely unpredictable as that is, and upon the readiness of the railroads to cut rates to maintain a hold on some part at least of their already shrunken passenger business."

### *New England Water Works Association*

At the 54th annual convention of the Association, KARL R. KENNISON '08 was presented the Dexter Brackett memorial medal, awarded each year for the most meritorious paper printed in the *Journal* of the Association. The title was "Boston Metropolitan Water Supply Extensions." Other Technology men presenting papers at the convention were: ROBERT S. WESTON '94, on the various methods for removing iron, manganese, and carbon dioxide, emphasizing the use of pyrolusite; RALPH W. HORNE '10, on six important steps in developing a groundwater supply by shallow driven wells; FRANCIS H. KINGSBURY '12, the importance of groundwater supplies in Massachusetts. HAROLD K. BARROWS '95 was elected to the

board of directors; WARREN J. SCOTT '18 became a vice-president; GORDON M. FAIR '16 continues as editor of the *Journal*.

### A.I.M.E

At the fall meetings of the American Institute of Mining and Metallurgical Engineers in Chicago, San Francisco, and Houston, a number of Technology men took part: Chicago — Institute of Metals Division — VICTOR G. MOORADIAN '34 and JOHN T. NORTON '18, a paper on "Influence of Lattice Distortion on Diffusion in Metals"; IGOR N. ZAVARINE '20, a paper on "The Initial Stages of the Magnetic and Austenitic Transformations in a Carbon Steel"; CYRIL S. SMITH '26 and EARL W. PALMER, a paper on "Thermal and Electrical Conductivities of Copper Alloys"; RICHARD F. MILLER '34, a paper on "An Apparatus for Determining Creep in Single Crystals." W. MALCOLM CORSE '99 is Treasurer of the Institute of Metals Division. San Francisco — FREDERICK W. HORTON '04, a paper on "Tungsten and Molybdenum." Houston — WARREN K. LEWIS '05, a paper on "Properties of Suspensions and Emulsoids." THOMAS V. MOORE '29 was Section Chairman for the Petroleum Division. LOUIS S. CATES '02 is a vice-president of the A.I.M.E.

## DEATHS

\* See class notes for account.

ALBERT S. SMITH, who until his retirement in 1933 had for many years been the Institute's Superintendent of Buildings and Power, on September 20. He was born in Amsterdam, Holland, 66 years ago, and, when still a boy, shipped before the mast on a Dutch East Indian ship. After several years in sailing vessels, during which he made voyages to many parts of the Far East, Major Smith became interested in marine engineering, and served as engineer on various vessels, particularly on the Atlantic and Gulf coast routes.

It was on a voyage to Canada that he met his wife, Lillian Ainslee Wry of Sackville, N. B., who survives him. Soon after their marriage they came to Boston, where Major Smith joined the engineering staff of the Boston Elevated Railway Company. He later became engineer of the Sullivan Square Power Plant, leaving that position to join the staff of Technology in 1904.

As superintendent of Buildings and Power, Major Smith became one of the familiar figures of the Institute. Affectionately known as "The Major," he brought to his work that high regard for discipline and thoroughness characteristic of men who have spent many years at sea. He had full responsibility for the operation of all buildings and power and effected many operating economies during the years of his supervision. When the Institute's great buildings in Cambridge were opened in 1916, Major Smith supervised the huge task of moving the equipment from the old buildings in Boston.

During the War, Major Smith joined the Corps of Engineers with the rank of Captain and later was commissioned a Major. One of his achievements during that period was supervision of the construction of a huge flame-throwing war tank, which was designed by the late Professor EDWARD F. MILLER, and was built in a Boston iron works.

In addition to his duties at the Institute, Major Smith had served on many state and municipal boards and was frequently consulted on municipal engineering problems. He retired in 1933 because of illness.

In addition to his wife, Major Smith is survived by his son, ALBERT V. SMITH '20, who succeeded him as Superintendent of Buildings and Power, and a daughter, Mrs. Charles Paine of Bangor, Maine.

HERBERT COOLIDGE '71, September 26. A distant relative of former President Coolidge, Mr. Coolidge had been in the insurance business in Boston more than 50 years, retiring a few years ago from Gilmore, Rothery and Company.

CHARLES A. BELDEN '73, September 3.

CHARLES R. PRATT '79, on September 3. A specialist in the construction of elevators, Mr. Pratt designed and built the first electric elevator ever built, in 1888. This was installed in Tremont House, Boston. As a consulting engineer, he obtained a score of patents on elevator safety devices, hydraulic transmissions for motor vehicles, and machine-tool devices. His latest work was the development of a duplex drive type of elevator.

JOSEPH E. SMITH '81, August 19.

HENRY D. BENNETT '84, September 5.

BENJAMIN F. COPELAND '85, September 23.

EDWARD A. CRANE '89,\* August 2.

ARTHUR HOWLAND '91, October 8. Mr. Howland was nationally known for his research in color. For many

years he was connected with the Wadsworth-Howland Company of Boston as factory business manager and later as color analyst. He did distinguished work in color research which was climaxed by his invention of the Howland color photometer, a device for the mathematical measurement of color. For the past five years he was associated with the Day Trust Company of Boston.

¶ PRESCOTT A. HOPKINS '92, May 29.

¶ ELIZABETH S. MASON '93,\* September 11.

¶ SUSANNAH USHER '98, August 31.

"Few women connected with the field of home economics had so thorough a grounding and so wide a range of study and research as Miss Usher. Originally a graduate of Pratt Institute, she later was graduated from M.I.T., taking her S.B. in biology. Associated with Simmons College, Boston, in its early days (returning as a lecturer in later years), she taught for seven years in the University of Illinois, where she was co-author with Professor Isabel Bevier of two books, 'Food and Nutrition' and 'The Home Economics Movement.' During the War she was a lecturer on marketing at the University of Chicago. Later, at Cornell University, Miss Usher had charge of an experimental house and family, where special investigations were made of meat and a bulletin was issued by the University on these findings. She lectured also at Teachers College, Columbia University, among other institutions. Miss Usher was a student who investigated foods at their sources. She made special studies of tea, coffee, and citrus fruits, and educated a naturally fine sense of taste till she could identify teas and coffees as do the professional tasters. In all her work she was thorough and honest, and her brilliant mind was always sanely balanced." (Boston Transcript)

¶ DAVID A. ELLIS '00, October 2.

¶ ROBERT R. LINGLEY '00,\* September 17.

¶ WILLIAM W. BIGELOW '07, October 4.

¶ KNIGHT B. OWEN '16,\* September 12.

¶ WILLIAM M. SHAKESPEARE '16,\* August 19.

¶ WING L. WEI '18,\* September 22.

¶ JOSHUA CRANE, JR. '21, August 28.

¶ EDWARD BANCROFT '23, August 3.

¶ ARTHUR C. HAMPTON '23, August 23.

¶ HAZEL TAYLOR MORGAN (Mrs.) '24, on April 8.

¶ EMILIO POZAS '25, August 14.

¶ ROBERT M. ROSSI '33, August 22.

# COMPARATIVE STANDINGS OF UNDERGRADUATE ACTIVITIES

(Based on June 1935 Ratings)

	Average	Increase Over June, 1934	Corresponding Rank in June, 1934
1. Tau Beta Pi.....	3.99	*0.12	1
2. Alpha Chi Sigma.....	3.75	*0.065	4
3. Officers and Representatives, Combined Professional Societies.....	3.63	0.10	9
4. Alpha Kappa Pi.....	3.62	0.08	8
5. Officers of the M. I. T. A. A.....	3.60	0.17	16
6. Technique Management.....	3.56	0.09	12
7. T. E. N. Management.....	3.55	0.096	14
8. T. E. N. Staff.....	3.50	*0.06	5
9. Dorm Committee.....	3.48	0.09	19
10. The Tech Management.....	3.43	*0.39	3
11. Combined Musical Club Performers.....	3.42	*0.034	14
12. Wearers of the Varsity Athletic Insignia other than "T".....	3.372	0.014	22
13. Chi Phi.....	3.37	*0.18	7
Average of 604 men in 24 activity groups	3.35	*0.13	
14. Theta Delta Chi.....	3.34	0.128	35
Average of 100 men engaged in dramatics and musical activities.....	3.336	*0.30	
15. Sigma Alpha Mu.....	3.33	0.21	44
Average of 176 men engaged in publications activities.....	3.325	*0.12	
16. Phi Mu Delta.....	3.32	*0.20	10
17. Voo Doo Staff.....	3.319	0.069	32
Average of 163 men engaged in athletic activities.....	3.315	*0.091	
18. Phi Delta Theta.....	3.31	*0.08	27
19. Combined Musical Clubs Management.....	3.306	*0.754	2
20. Technique Staff.....	3.301	*0.109	18
Average of All Dormitory Residents.....	3.30	*0.06	
Average of 254 men on the staffs of activities but not holding managerial or executive positions.....	3.294	*0.086	
21. Delta Upsilon.....	3.28	*0.07	23
22. Varsity Sports Captains.....	3.275	*0.215	11
Average of 158 men holding managerial positions.....	3.242	*0.234	
Average of all undergraduates.....	3.24	*0.10	
23. Tech Show cast, chorus, orchestra.....	3.234	*0.043	30
24. Delta Tau Delta.....	3.226	0.061	41
25. Beta Theta Pi.....	3.225	*0.215	15
26. Kappa Sigma.....	3.21	*0.10	26
27. Sigma Chi.....	3.20	*0.113	25
28. The Tech Staff.....	3.166	*0.113	29
29. Delta Psi.....	3.16	*0.08	33
30. Wearers of the "T".....	3.156	*0.30	13
Average of all fraternity men (Does not include Tau Beta Pi and Alpha Chi Sigma).....	3.13	*0.10	
31. Voo Doo Management.....	3.128	*0.252	18
32. Institute Committee.....	3.124	*0.429	6
33. Sigma Nu.....	3.116	*0.078	39
34. Phi Kappa Sigma.....	3.114	*0.204	24
35. Theta Xi.....	3.106	0.126	47
36. Phi Gamma Delta.....	3.10	*0.087	40
37. Varsity Sports Managers.....	3.065	*0.233	28
38. Phi Sigma Kappa.....	3.06	*0.149	36
39. Delta Kappa Epsilon.....	3.05	0.06	46
40. Phi Kappa.....	3.00	*0.20	37
41. Tech Show Staff.....	2.96	*0.460	17
42. { Alpha Tau Omega.....	2.91	0.07	49
{ Phi Beta Delta.....	2.91	*0.285	38
43. Sigma Alpha Epsilon.....	2.87	*0.35	34
44. Phi Beta Epsilon.....	2.83	*0.31	43
45. Tech Show Management.....	2.825	*0.285	45
46. T. C. A. Cabinet.....	2.82	*0.452	31
47. Theta Chi.....	2.81	*0.346	42
48. Lambda Chi Alpha.....	2.66	*0.20	48

\* Decrease

# NEWS FROM THE CLUBS AND CLASSES

## CLUB NOTES

### *Technology Club of New York*

The Club opened its fall season with a highly successful evening meeting on September 17. Merle C. Hale, who is the director of industrial relations of the General Motors Corporation, delivered an electrically illustrated talk on "Employee Relations." The talk, according to Mr. Hale, is known as the "gadget" talk and has been presented to a large number of foremen's meetings throughout the General Motors organization. By means of unique electrical circuits, neon signs, flashing lights, and a liberal quantity of old-fashioned flashlight powder, Mr. Hale traced the formation of a difficult labor situation in a hypothetical factory.

He started with two employees who carried grievances (represented by two red flashing lights) and made it possible for destructive labor organizations to gain a foothold (represented by quick-flashing neon arrows) and lead up to a terrific climax — a violent strike (represented by the loud report and smoke of flashlight powder).

Here Mr. Hale applied his so-called M.U. meter (mutual-understanding meter) to find the basic cause for the difficulties in which the workers and the management found themselves. He soon found the trouble and explained the steps he would use to correct it if such a situation were to occur in his organization. — The talk was highly applauded by the 200 members and guests who crowded the hall to hear it. Alfred Glassett '20, President of the Club, told the audience that every effort would be made to have future meetings as interesting and instructive as the one which they were attending.

During the summer, the regional scholarship in this area was won by Bascom C. Emerson of Mount Vernon, N. Y. Mr. Emerson will enroll in the Course in Business and Engineering Administration.

Forty-six applicants were interviewed by the committee awarding the scholarship. Many of those who applied for the regional scholarship subsequently received partial tuition scholarships from the Institute.

The Club is continuing with its membership drive, and the membership is rapidly increasing. Among recent members are: Edmund R. Kent '18, Harold J. Ryan '26, Reginald W. Tarr '30, Joseph A. Kane '32, Ivor N. Morgan '33, Reginald J. Nahas '34, Edward C. Taylor '34, Alexander J. Rogowski '34, and Gordon Day '35. — CONSTANTINE S. DADAKIS '34, *Publicity Committee*, 644 Riverside Drive, New York, N. Y.

### *Technology Club of Lower Ontario*

The opening meeting of the fall was held Thursday, September 12, at the Scarboro Golf and Country Club, near Toronto. Only eight turned up for golf, but they had a great game, as the weather was perfect and Scarboro is one of the best courses in this part of the country. Sixteen attended the dinner in the evening. This small group was a disappointment, but various members were away on holiday or on business. Both as an experiment, and to let Technology men know that this association was functioning, notices of this meeting were sent over a radius of about 100 miles. Actually, the response from distant places was most encouraging. L. A. Richardson '19 at London (100 miles) wrote that he would be here; two men drove from Brantford (70 miles), Edgar Taylor '28 and George Wedlake '28. There was another '28 man at this meeting, and for the first time, F. Kenneth Davis, originally from Houston, Texas, but now from Port Credit (near Toronto) with the Lloyd Refining Company. I venture to say that he does not mind our degree of heat as contrasted with Houston.

After a very excellent dinner, President Gledhill called the meeting to order, and the minutes of the last meeting were read. Mr. Gledhill expressed the pleasure of the members at the enthusiasm of those men who came from a considerable distance, and welcomed them to the Club. A letter was read from Denton Massey '24 expressing his inability to attend, owing to the pressure of other matters, and bestowing his blessing on the meeting. Mr. Massey is deep in politics at the moment as he is the organizer for Mr. Bennett and the Conservative Party for the Province of Ontario for the forthcoming election and he is contesting a constituency.

A letter from Professor Charles E. Locke '96 asking the Club to decide how much territory they wished to include in their jurisdiction was read. This matter was discussed fully and it was decided that the radius should include London on the west, Kingston on the east, St. Catharines on the south, and Northern Ontario. A list of all the Technology men in the area will be compiled and circulated to the membership in the near future. — Plans for the winter meetings were discussed. It is hoped that a representative from Technology may visit us at our next meeting, probably in December.

The meeting was then turned over to John Keenan '23 who put on a three-reel talkie on the value and importance of light. This was the style of industrial film that is not spoiled by too much obvious advertising. We were quite satisfied to give Keenan's company, the Canadian

General Electric, the benefit of the small amount of advertising shown at the end of the film. Henry H. Tozier '96 again contributed to our entertainment with a series of colored movies taken on trips through the Thousand Islands, Cape Cod, and Maine. A hearty vote of thanks was given to Mr. Keenan and Mr. Tozier for their excellent and instructive entertainment, and the meeting was then adjourned.

William E. West '99, a member of the Scarboro Golf and Country Club, was responsible for the courtesies of the club being extended to us. Those attending were: John Buss '26, Harry Patten '08, Thomas Gledhill '26, John Keenan '23, David Rogers '15, Valentine Wilson '28, David Peene '29, Louis Black '14, Archibald Holmes '00, Davis Johnston '26, S. R. Mackellar '12, Kenneth Davis '28, Edgar Taylor '28, and George Wedlake '28. — BERNARD H. MORASH '12, *Secretary*, Room 501, 137 Wellington Street West, Toronto, Ontario, Canada.

## CLASS NOTES

### 1873

The annual meeting and luncheon of the Class was held at Walker Memorial on June 3. Five members had expressed their intention of being present but, on account of sickness and business, only two were present. We were greatly honored by a call from President Compton and Professor Charles E. Locke '96, Secretary of the Alumni Association. After lunch, we adjourned to the residence of our classmate who is ill, Frederick Guild, 133 Bay State Road, Boston.

Stephen H. Wilder died on May 15 and Charles A. Belden on September 3. — GEORGE M. TOMPSON, *Secretary*, 8 Whittemore Terrace, Wakefield, Mass.

### 1877

Continuing the memoir type of notes started in the last issue of *The Review*, we are glad to be able to give you another letter from Francis Bacon and one from Arthur Plimpton. Bacon's comes from Chanakkale: "Yours of August 1 is received, also the class photo. Many thanks for both. I could recognize most of the outfit, including the hustling Class Secretary who drags all these old duffers out of their nests and sets 'em up to be photographed. Ought to be a law against it! However, this is no way to receive Williston's kindly act and, no doubt, Dick Hale looks on with approval from the Elysian Fields.

"Seeing all those old comrades around that table brings back many memories. You say you didn't go with us to Philadelphia in 1876 when we lived in huts on the Pennsylvania campus, with Zalinski as commander of the outfit. You missed a



1877 Continued

lot. On returning that summer, I had left the Institute and worked there for Professor Ware, copying drawings. I boarded at what is now the Harrison Gray Otis house, a museum of New England antiquities, then a very select boarding house such as the 'Autocrat of the Breakfast Table' described. I had a room on an upper floor overlooking Cambridge Street, where the horse cars came up into Bowdoin Square. Now the reason I'm telling you this yarn is this: all from seeing good old Plimpton's photo in the group. That fall was the time of the Hayes-Tilden campaign, and in the torchlight procession the Tech boys wore white nightgowns and next to them came the Faneuil Hall butchers in their white frocks. There was a row about precedence right under my window where I was looking out, and they got into a regular fight, slashing each other with their torches. I think Plimp was very prominent in that rumpus.

"So you come from good old Maine! I spent two years at Orono (Class of '76, Rah! Rah!), taking engineering before I went to Tech for architecture. Hooray for the Penobscot, Casco Bay, and the spruce-clad islands! I sailed all around these and know them well. A great friend of mine, Dr. Vincent Bowditch, used to go to Cranberry, also Herbert Putnam, Librarian of Congress. I dream of that Maine coast now. — I'm glad your grandson has recovered. Good luck to you at Halifax and Mexico. I'll look forward to the Tech Review — but only *one* please."

Plimpton's letter comes from West Roxbury, Mass.: "I received your letter of the 16th enclosing one from Bacon which interested me very much. Bacon was a good friend of mine. He designed and had made for me a tall hall clock, so for *all time* I shall remember him.

"I recall the row with the butchers in connection with the torchlight procession. We had nerve to tackle them, for they were a husky lot. — Many memories of Tech days come back to mind. Some will remember the time when, during a lecture by Professor Cross while he was illustrating his subject on the blackboard, Colgan gave such a terrific sneeze that it startled everyone. The Professor turned around much disturbed and said: 'Mr. Colgan, have you a handkerchief?' 'Yes, Sir,' replied Colgan. 'Would you like to borrow it?'

"I recall, also, the day when Decatur came into the drawing room with his bulldog, who proceeded to explore under the tables and, finally, picking up one of the satchels in his mouth, started on a race around the room, much to the glee of the boys, who urged him on. The one who seemed to enjoy it most was Carter, until he suddenly discovered that it was his satchel that the dog had. Carter's expression suddenly changed and he shouted: 'Stop that dog!'

"We were very proud of Swain the day he asked Professor Henck a question that posed him. Hesitating a while, the professor finally said he would look that up.

"At the Centennial at Philadelphia, referred to by Bacon, we all wore gray linen dusters and had straw hats, the

ribbons on which were cardinal red and silver gray. This was the first time the Tech colors were publicly exhibited. We went to the exhibition soon after Tech closed and landed there on a very hot day. It was some stunt pitching our tents. A candle had been attached to the vertical pole of each tent; upon our return from the exhibition at night, there was no candle in the tin socket, but there was a little stalagmite of wax on the floor underneath. — Those were great days . . . !"

— BELVIN T. WILLISTON, *Secretary*, 3 Monmouth Street, Somerville, Mass.

## 1883

As Will Rogers, the beloved Democrat, used to say, "I only know what I read in the papers," and I read in the papers very little about members of the Class. Horace Gale's efforts as chairman of a huge committee to carry on the fight to have billboards controlled in Massachusetts get into the headlines, however. Ten years or more this effort has been going on and is now successfully sustained by the Supreme Court of the Commonwealth. Horace and his better three-quarters, together with the Secretary and wife, nine-tenths fine, spent a delightful vacation at Twin Lake in the Sunapee region of New Hampshire, in August. We propose to have the next reunion of the Class held there, probably in August, 1936.

The Secretary, who claims to know more about money and to have less of it than any man of his acquaintance, has published two articles on that subject this summer: One, a critical study of social-credit, so-called, and the other, "Are Bank Deposits Money?" The first was in the *Bankers' Magazine* for June and the other in the issue for September.

Harvey Mansfield represented the Class at a general meeting of Technology men at Tampa, Fla., recently. — HARVEY S. CHASE, *Secretary*, Bridge Street, South Hamilton, Mass.

## 1885

The Class was well represented at the Commencement Exercises in June, also at its Fiftieth Anniversary Reunion at Wellfleet, Mass. In fact, about 40% of its members then living were present, including one from Alabama and one from New Mexico.

We have suffered a great loss in the death of Arthur D. Little, probably our most brilliant classmate, and in Isaac W. Litchfield, who had been Class Secretary from the beginning and had given unstinted devotion.

During the present year the following have passed away: Lyon, Hildreth, Plaisted, Means, Greene, Litchfield, and Little. Biographies of the latter two were presented in The Review for October, pages 22 ff. — ARTHUR K. HUNT, *Secretary*, 145 Longwood Avenue, Brookline, Mass.

## 1887

The annual Class Dinner was held at the Parker House on Sunday, June 2, with 14 of the "faithful" attending. Seated

around the festive board were President Taintor, Carter, Brett, Very, Lane, Proctor, Blake, Tripp, W. H. Brainerd, Gay, Cameron, Goss, Draper, and Cole. President Giles officiated in his usual gracious manner, and our worthy Class Treasurer, George, formerly of Milford but now of Los Angeles, provided a layout which was unsurpassed. A general discussion followed the dinner, during which Cameron and Goss spoke very interestingly on the business situation and outlook. Carter read excerpts from Guy Kirkham's book, "From One Age to Another," which recalls very vividly the events of our days at the Institute. A night letter was sent to Frank Merrill conveying the greetings of the Class. Merrill is an invalid now and practically helpless, but still maintains his interest in the Class.

The writer begs to call attention to the fact that he has returned to Salem. Any news from the members will be gratefully received at this address. — NATHANIEL T. VERY, *Secretary*, 1 Hamilton Street, Salem, Mass.

## 1889

Conant, Fiske, E. V. French, Gleason, Hobbs, Howard, Kilham, Lewis, Linzee, and Thurber were present at lunch, June 3, at the Walker Memorial and were seated in an impressive dining room usually reserved, we believe, for the Faculty and visiting royalties. Much intimate conversation ensued of a type which would be invaluable to the press, had reporters been allowed. Frank Hobbs (Republican, President), allowed that times might improve unless they got worse, but his opinion was contested by Thurber (Republican, President, Chairman), who thought that they might get worse if they didn't get better. H. Howard (Republican, world citizen) recalled the good old days when a king was a king and could go yachting just like anybody else, and Conant (Independent, Manager) produced a new kind of Florida cigarette, long, black, mild and yet pungent, and said that in spite of everything there was no place like Florida to enjoy life, but Gleason, (Democrat or Republican, Secretary not sure) said that old New England was good enough for him and he believed that the times would improve soon, unless they got worse. Others (Liberal, Conservative) seemed to share the same idea, so there was nothing afoot which could be called a controversy.

John Hall Rankin has been named head of the Philadelphia WPA. The *Evening Public Ledger* of that city printed the following account of his life: "Mr. Rankin, who is 67, is a member of the firm of Rankin and Kellogg, with offices in the Architects Building, 17th and Sansom Streets. He is a graduate of the M.I.T. and, like Mr. Townsend, also had considerable military training, but in the Spanish-American War. He is President of the Architects Building Corporation and has designed many large public and private buildings in various parts of the country, including Haddon Hall, Atlantic City, the Camden County Courthouse,

1889 Continued

Mechanic Arts High School, St. Paul, United States Department of Agriculture Building, Washington, post-office buildings in Camden and Indianapolis, United States Army Supply Depot, Fort Mason, Calif., Montgomery County Courthouse, Norristown, and the Provident Trust Building in this city. His clubs include the Rittenhouse, T-Square, Cosmos Club of Washington, and the Penlllyn Club. He is a fellow of the American Institute of Architects, past President of the Philadelphia Chapter and past President and honorary member of the Southern Pennsylvania Chapter of that organization. In 1909 he was appointed by President Theodore Roosevelt as a member of the National Advisory Board on Fuels and Structural Materials, and in 1912 he was named a member of the Permanent Committee on Comprehensive Plans of the City of Philadelphia. Mr. Rankin lives on his estate, Deep Run Farm, at Penlllyn, Montgomery County."

*Fibre and Fabric* carried the following obituary of our late classmate, Charles LaRose: "Charles R. LaRose, better known than the average man in the textile chemical industry and for many years a traveling salesman for various chemical houses before he entered business for himself, died on January 21, at his home in Medford, Mass. Mr. LaRose was educated in the boys' academy in Albany, N. Y., the military academy in Poughkeepsie, N. Y., and was graduated from M.I.T., Class of '89. On leaving M.I.T., he entered the employ of the Oakes Manufacturing Company, the well-known producers of hematine and logwood extracts. Three years later he resigned as salesman for the former company to become associated with Stone and Ware Company, remaining with them at the time the firm consolidated with Schoelkopf, Hartford and Hanna. He was still with the consolidated firm when the latter was merged with the National Aniline and Chemical Company. He was sent to Providence to open a branch office and remained its manager for about 18 years. On leaving its employ, Mr. LaRose, with his son, Ralph, organized the Industrial Chemical Company of Providence, which manufactured dyestuffs and chemicals. It was not long before Mr. LaRose sold out his interest in the company and organized the Tex Chemical Company, with headquarters in Providence. This firm manufactured bleacher's blue, lacquers, and enamels. In time he sold out his interest in this company and soon organized the Solvent Products Company to manufacture finishing compounds, establishing the business in Arlington, Mass., with his son, Ralph, again actively associated with him, as he had been in the management of the two companies previously mentioned. Mr. LaRose was President and his son was Treasurer of the new company. From Arlington the company was removed to its present location in Medford, about eight years ago. Since then the business has grown to sizable proportions under the leadership of Ralph LaRose, who took over full management when his late father

became afflicted with heart trouble about six years ago, never again to become active in the business he had so successfully founded.

"The late Mr. LaRose was of the old-fashioned school of chemical manufacturers, modest in demeanor, able in business, with a keen sense of values. No man was more affable than he. He had a vivid sense of humor that made him friends wherever he traveled among the mills of New England. He had that knack of knowing what to say in any company of men to make interesting conversation. In his private life he was a real family man to the fullest extent. His philanthropies were numerous to those in need but he never wanted the public to know anything about them. His passing will be mourned, for he was truly a gentleman of the old school who lived up to all its tenets. In fine, Mr. LaRose was a most companionable gentleman, faultlessly courteous to young and old. It may be said, without fear of contradiction, that it hurt him during the years of his illness because he could not go about spreading good cheer among his host of friends in every walk of life and in the textile industry. Such men are bound to be sadly missed for the good they did. He leaves his widow, Carolyn LaRose, and a son, Ralph, head of the Solvent Products Company, both of Medford."

The death of Edward A. Crane occurred on August 2 at the Friends' Hospital, Frankford, Philadelphia. He had been ill for ten years. The Secretary hopes to have an account of his life work later.

Billy Duane has died. The *Engineering News-Record* printed the following, but the Secretary hopes to obtain a fuller notice: "William M. Duane, PWA resident engineer in Cincinnati, Ohio, died there on August 22, at the age of 68. Mr. Duane was graduated from the M.I.T. in 1889 and became assistant engineer on the Cincinnati and Muskingum Valley Railway. He later took a similar position on the Indianapolis division of the Pennsylvania Railroad and in 1891 became assistant chief engineer of the Peoria and Eastern Railway, but resigned after a few months to become engineer of maintenance of way for the Cleveland, Cincinnati, Chicago and St. Louis Railroad. He later became superintendent of construction for this road and in 1907 was made chief engineer, which position he held for five years. He later became a member of the firm of Duane and Carlen, railroad contracting engineers."

Frank Field has also passed away. The following account of his life has been received: Frank Russell Field, son of the late Charles R. and Martha H. Field of Greenfield, Mass., was born in Greenfield on February 2, 1865, and died in Los Angeles, Calif., January 25. He was educated in the public schools of Greenfield and at the Institute of Technology, Boston, Class of '89. His first work was with the National Tube Works at McKeesport, Pa., as a draftsman. Later, at Chicago, he was employed as sales engineer by the Link Belt Machinery Company of that city. For the last 35 years of his life he

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represented the Jeffrey Manufacturing Company of Columbus, Ohio, manufacturers of mining and other large machinery, 20 years at Denver, Colo., and the last 15 years as their Pacific Coast Representative at Los Angeles. In 1897 at Denver he married Jessie McElhenie of that city, and she died in 1918. After moving to California he married, in Los Angeles in 1921, Edith W. Wait, daughter of the late Frank Wait of Greenfield, Mass. There were no children of either marriage.

For the last nine years of his life Mr. Field lived at his home in Mar Vista, a suburb of Los Angeles. During the greater part of that time he was more or less of an invalid, but found great pleasure in his home, music, library, and the cultivation of an apiary, at which he was quite an expert. He was an ardent lover of good books and of the best music, having been an organist of some ability in his early years. His fine library contained many books relating to organ construction. Greenfield is also the native city of Clarence Eddy, the celebrated organist, and Mr. Field and Mr. Eddy were friends of long standing. Mr. Field took pleasure in writing and was an occasional contributor to *Bees and Honey*, a local journal, and to *The Diapason*, a musical magazine of some note published in Chicago. Mr. Field was keenly appreciative of the artistic and had a particular interest in fine clocks, a variety of which adorned his attractive home, among them being the tall, stately, grandfather, the dignified Westminster chimes, the merry cuckoo, and the more modern electric affairs. He had a genial personality and was greatly beloved, leaving many friends, not only of his boyhood days in the East but in every place where he lived his long and useful life. He was a member of the local Chamber of Commerce and took an active interest in all civic affairs.

Quoting from the many letters received after his passing: "He smiled through life." "He was unselfish, thoughtful, loyal, and lovable." "He always seemed to me the epitome of a perfect gentleman." "One of the finest, dearest men I ever knew." Funeral services were held on January 28, at St. Mary's Episcopal Church, Palms, Calif., Bishop Gooden and Father Robertson, Vicar in charge, officiating. Cremation followed and the ashes will be laid to rest in the Field family lot in Greenfield, Mass. Mr. Field is survived by his wife and one brother, Charles E. Field, of Akron, Ohio, who for many years until recently was General Manager of the National Lead Company of Chicago. — WALTER H. KILHAM, Secretary, 126 Newbury Street, Boston, Mass.

## 1891

The Class held its Forty-Fourth Reunion at Aiken Manor, Webster Lake, Franklin, N. H., on Saturday and Sunday, June 22 and 23. There were 40 of us altogether: Fred and Mrs. Blanchard and his sister-in-law, Mrs. Winslow Blanchard; Tom and Mrs. Keene and his sister-in-law, Mrs. Williamson; Gorham and Mrs.



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Dana; Walter Douglass, his niece, Miss Chase, and his son and daughter-in-law, Mr. and Mrs. Donald C. Douglass; Will Punchard; Frank Howard and his daughter-in-law, Mrs. Paul Howard; Arthur and Mrs. Howland; Howard and Mrs. Forbes; Harry and Mrs. Cole; Will and Mrs. Wilder and their daughter and son-in-law, Mr. and Mrs. Harry Bliven; Ed Earl; Carleton Read; David and Mrs. Ambrose; Channing and Mrs. Brown; Walter and Mrs. Hopton; Henry and Mrs. Fiske; Charlie and Mrs. Aiken with their son, Dan Fell, and their daughter and son-in-law, Mr. and Mrs. Roger Johnson.

The Hoptons had been with Charlie several days. The Fiskes and the Wilder family came up on Friday. Most of the others arrived Saturday morning and left on Sunday afternoon. The weather was fine and it is a beautiful spot. The old Manor House overlooks Webster Lake with the main highway between it and the lake. Aiken Point with the summer house and the bathing beach is right in front. There are several smaller houses belonging to Charlie, where he stows his guests, and down the road a little way toward Franklin, right among the pines on the lake shore, are the tea house, cottages, and log cabins which belong to Charlie's daughter, Dorothy Johnson.

The Forbeses, Howlands, and Blivens had log cabins, while the rest of us were at the Manor or houses. And such log cabins with bedroom, parlor, and bath, fireplaces, hot and cold water, porches, and so on!

We all had our meals at the Manor, some in the big dining room and some on the side piazza (buffet luncheon, chicken dinner, breakfast, and Sunday dinner, for about 40 of us). There was a fine cook and there were Simmons College girls to wait on us. Our hosts, Charlie and Mrs. Aiken, did themselves proud and seemed to enjoy it all as much as the rest of us.

The big barn was fixed up for sports, including ping pong and "table bowls" (the Secretary's name for a miniature edition of the English game of bowling on the lawn with lopsided balls) the only one of its kind in the country. Saturday evening Gorham ran the movies and showed us Charlie's pictures of the Fortieth Reunion.

Charlie took some fine movies of this outing. Some of us have seen them, and we hope to show them at our dinner this winter.

Keene, Blanchard, Fiske, and Bliven had a foursome of golf at Franklin's nine-hole, uphill, downhill course, and Tom Keene came out ahead as usual. — Saturday evening we called up Barney at Cohasset and several of us talked with him; we also sent him a letter signed by all of us. It was too much of a trip for Barney and we all missed him.

Sunday morning, some of the party visited the Rising garden at Webster Lake, Walter Douglass' "Quick Water Farm" in Wilnot, Gorham Dana's summer home, "Emetuas," on Davis Hill, New London, the Howard cottages on the shore of Lake Sunapee, and Professor Dewey's home nearby.

The ladies seemed to enjoy the reunion as much as the men. Many of them have known each other for years and several were not backward in expressing the hope that they again be invited to our outing. Arthur and Mrs. Howland stayed at one of Dorothy's cabins for two weeks, later in the season. Arthur was recuperating after an operation. Tom and Mrs. Keene stopped at the Manor for a night, also Henry and Mrs. Fiske. Anyone going north through New Hampshire can easily stop off at Aiken Manor. If you have not been there, try it some time.

It will not be long before it is time for our winter class dinner, probably about the middle of January. If any of you who live at a distance could come if the date were right, please advise the Secretary.

Then comes our Forty-Fifth Reunion. Have you any ideas or suggestions? Those who have spoken of it at all seem to feel that East Bay Lodge is as good a place as any. The middle of June seems the best time and we will find out whether Mr. Brown can take care of us as heretofore. With two highly successful reunions to our credit at East Bay Lodge, it might be difficult to find anything better.

Frank Howard has another grandson, eight and one-half pounds. This makes three granddaughters and five grandsons. He is one of the leaders, and most of us are far outdistanced. — Harry Cole took Barney for a ride to the Cape, over the new bridges, and to the new State Pier at Bourne. George and Mrs. Holmes, daughter and son, also took Barney for an auto ride. Other visitors to Cohasset this summer were Tom and Mrs. Keene, Frank Howard and sister, Howard and Mrs. Forbes. — Ambrose and Mrs. Walker spent a few days at Dana's summer home in New London, N. H.

Harry Young writes that he is up and around, has discarded his crutches, and all is fine again. He says Steve Bowen has been motoring all over Canada. George Vaillant has been celebrating the 300th anniversary of the settlement of Washington, Conn. (and vicinity?), his summer home. — Anna Gove sent a postal to Barney from Ashville, N. C., showing Chimney Rock. The mountains of western North Carolina are very high and scenic with excellent roads, and that section is famous for its laurel and other flowers. — Horace Ensworth did not feel well enough to attend the reunion. He has gone to England and expects to remain there until October.

A nice letter came from John Putnam from West Haven, Conn. He mentions a two weeks' vacation in Hampden near Springfield, Mass. The Putnam Kitchen preserve business has not been so good and the hard times have also affected Green Briar on Cape Cod, where his sister has a tea house and sells preserves. This is in East Sandwich. His daughter, Priscilla, and Ed are at West Dennis on the Cape.

George Hooper has written two interesting letters this summer from which the following is quoted: "We made our annual trip to the San Joaquin Valley and Mojave Desert to see the spring flowers.

Due to the unusually large rainfall of the winter, we found a surpassingly varied and prolific display. It was this year so much of a feature that hotels were booked up for a week in advance.

"Of course, the most pleasant experience was the recent visit of Jim Swan who spent an all too short Sunday afternoon with us. Our tongues wagged about 19 to the dozen and my wife and I felt greatly deprived that his plans permitted no more time with us. Our two daughters have rented, for three months, a house in Santa Barbara and are now there, the elder's husband and our son joining them there each week-end.

"A new planetarium was recently opened in one of the Los Angeles Parks not far from Pasadena. My wife and I spent two very interesting hours there in merely examining the exhibits and will go again to view the main demonstration in the auditorium. We plan to leave about July 16 for our annual fishing trip in the North. This year we plan to go to Lake Almanor, which is near Lassen National Park about 200 miles north of Lake Tahoe. Our route will be via Santa Barbara, Carmel, Sacramento, and then over Donner Pass Road to Lake Tahoe, the route used by the ill-fated Donner Party which suffered such untold hardships when snowed in on this Pass on their trek from the East. On this road is Grass Valley, site of what is said to be the deepest gold mine in the world — managed also by a Tech man, Foote '99. I have met him, and he has greatly interested me by descriptions of some of the highly unusual mine equipment, of which I will write you later should I get to see it. It will not be possible to go to Carmel by the Coast Highway which Garrison and I have explored, unforeseen conditions having resulted in the necessity of relocation and bridge building at the upper end, so that the road is now expected to be opened in March next, about a year behind schedule.

"Our summer journeyings seem to be over and tomorrow all of our young people will return. Our two girls rented a furnished house in Santa Barbara for three months from June 15 and that spot has consequently been our rallying point since that time.

"About the middle of July we started for Lake Almanor in the upper central part of this state, not far from Lassen National Park which contains Mount Lassen 'the only active volcano in the United States' (outside of Alaska).

"On the way to Sacramento we used two new short routes which we had never before tried, one between Morro Beach and Atascadero, and the other between San Jose and Livermore.

"On reaching Sacramento we found the Placerville road to Lake Tahoe, our next stop, closed by the Forestry Service on account of forest fires — also they were drafting all able bodied men in the vicinity to fight fires. This latter is a terrible experience, lives are sometimes lost, and often those who have had the experience prefer to pay a fine or go to jail rather than repeat it.



1891 Continued

"The 'Donner Route' to Lake Tahoe could not be used because of repair work. This was named from a party of emigrants, headed by a family of that name, which was overtaken by winter in the Sierras and suffered terrible hardship before rescue could reach them. It is now well established that cannibalism was resorted to by some of them to preserve their lives. At one point near the site of their camp there is a verified mark showing a depth of snow of about 23 feet, while greater depths than this are not uncommon in the mountains of that region.

"We decided to return to Santa Barbara, which we did via Palo Alto and Carmel, where we stopped again for a few days. To reach Palo Alto we traveled by the Carquinez Straits Bridge, the first of the three large bridges which are making the shores of San Francisco Bay more accessible to one another, and then the San Mateo cut-off, a combined causeway and bridge about 12 miles long, across the southern shallow portion of the Bay.

"Much difficulty is being met with in maintaining the shore road to Carmel along the mountains, the foundations being so broken and shattered by past geological disturbances, that it is difficult to erect and maintain any structure upon it. It will be at least six months before the road is open to the public and it is already that much behind the projected opening date.

"On returning to Santa Barbara, we took a small apartment at the Edgcliff Beach Club, right on the shore in Montecito, where we were among friends and where our young people joined us nearly every day for lunch. Dr. George E. Hale, M.I.T. '90 and before his retirement head of the Mount Wilson Observatory here, was a frequent visitor to the Club and we had many pleasant chats with him and his wife.

"We remained at Edgcliff for about two weeks, returning then to Pasadena where we were treated to some hot weather vagaries, including a few thunderstorms and some humidity such as experienced persons have told us is to be experienced only in the Tropics. We then drove back to Santa B. where we remained until after Labor Day.

"Our son and son-in-law have gone fishing on a large scale, having been invited for a few days' cruise on a steam-whaler. These creatures are often caught outside the islands which fringe this coast at 20 or more miles out and the present cruise is taking them out beyond San Clemente which is 50 or more miles off San Diego. To give the party some real excitement, the whalerman is to omit from his harpoons the bomb which usually kills the creature instantly.

"Next month we expect to attend the San Diego Fair about which reports are contradictory. We know, however, that the buildings left from the former Fair are very beautiful and it will be a pleasure to again see them."

Jim Swan writes of his trip to the Pacific Coast last May: "I went out and came back via Panama, having 30 days on ship-

board, and enjoyed it thoroughly. I spent ten days with Katharine in Hollywood, then motored to San Francisco, a most beautiful trip. Then I spent 11 days in Berkeley, with Austin Sperry '94, my old University of Glasgow roommate. I had not seen him for 35 years, so you can imagine what a time we had. Spent two days in the Yosemite Valley. Saw the Big Trees, or at least some of them, and visited many other interesting and beautiful places. I spent an afternoon with George Hooper, at his home in Pasadena, and had lunch in San Francisco with Leland and his wife. Had hoped to see Hersam in Berkeley, but missed him."

Two letters came from Charlie Hanington, one in June and one in August. He tells of the dust storms followed by floods. "After seven years I have retired from the school board and now my only occupation is looking after this Museum. We are particularly interested just now in the evidence of early man on the North American continent. We have evidence near us which puts him back at least ten thousand years, and we expect more proof this summer when we are going to work in coöperation with Dr. Roberts of the National Museum at Washington. This last year we have added to our paleontological collection a mammoth, which we dug up some 50 miles northeast of here, and a fine mastodon we acquired in Illinois.

"We are having crowds here in the Museum these days, averaging over 1,800 a day and from all states of our glorious Union. Does not look like hard times.

"I am having a very trying time this summer, as my only son has been home and in bed for two months with little hope from the doctors that he will ever pull through." He sends his regards to us all and we send him our best and hope his son will recover.

Arthur Alley wrote Barney in August: "This year we are occupying our cottage at Del Mar (where George Hooper visited us a few years ago). It is 26 miles from National City and our cottage is located right on the beach, which is considered the best bathing beach in Southern California. The water is nice and warm and no undertow; once in a while there is a rip tide and this we must look out for.

"Ran into Charlie Garrison and his family at the Exposition. Was glad to see him, but the visit was too short. The Exposition is exceedingly attractive and beautiful and is set off by the natural beauty of the surroundings. The exhibits, too, are most interesting. Ford is by far the best. He not only put up a fine building in which is shown every detail of the construction of his car, but he also built a 'Bowl' and he supplies orchestras which play twice daily."

Several letters and post cards from Charlie Garrison keep us well "posted." First the post cards: June 4 tells of his visit to the San Diego Exposition; July 7, from Berkeley, tells of taking Ernest and Mrs. Hersam to the top of Mount Tamalpais; August 9, he moves to Berkeley for a couple of months; August 28, they plan to return to Santa Barbara in October; September 14, they arrived in Altadena

from Berkeley and plan to remain there until October 1. Then, for the next few months they will be at 1627 Chapala Street, Santa Barbara.

Now for the letters: That of June 21 tells of seeing Arthur Alley and his sister in San Diego. It also tells of his plans (a year ahead) to drive East and attend our Forty-Fifth, even gives details of route each way. They were about to leave for Berkeley to see their daughter. June 27, they first settled at 2629 College Avenue, Berkeley, and saw quite a little of the Hersams. A hilly country where you look from fourth floor windows to the foundation of the next house. July letter, tells of his daughter's work in San Francisco. Berkeley has cool nights, great summer resort. His son and daughter-in-law on a trip East and will meet them in San Francisco on their return. Further discussion of proposed trip East for our Forty-Fifth. (Classmates take notice.) He was near the University of California, fine concerts, and so on. August 16, moved to 2635 Durant Avenue. Charlie enthuses over the autobiography of John Hayes Hammond. His description of scaling Hersam Heights from his own apartment not far away is amusing: "We walked a few blocks from here, where some 40 stone steps take you to the next street (the first zig — you remember). Another 25 steps set you on a path rapidly rising for one-quarter mile, which lands you on the street just below his house. Then a real flight of steps — I counted 98 — leaves you at his garage whence a couple of dozen steps land you at his front door. We are some high steppers."

So many nice long letters from Charlie, George Hooper, and others; wish you could all read them.

Here are a few changes in address: Bert Kimball, 32 Rutland Street, Boston (Bert is doing some social work at the South End Music School); Stephen L. Coles, 101 Quentin Street, Kew Gardens, N. Y.; Edward Earl, 309 West Street, Leominster, Mass.; John S. Cook, 5200 South Peoria Street, Chicago, Ill. (Formerly no address recorded.) — HENRY A. FISKE, *Secretary*, Grinnell Company, Inc., 260 West Exchange Street, Providence, R. I. BARNARD CAPEN, *Assistant Secretary*, The Early Convalescent Home, Cohasset, Mass.

## 1893

Alumni Day, June 3, during Technology Commencement, was the occasion of a '93 luncheon at the Algonquin Club in Boston, where the usual complete and satisfying arrangements were made through Wright Fabyan and our Class President, Will Forbes. As speeches were barred, the occasion became one of delightful informality, not lacking in zest. Fabyan insisted on a poll being taken as to who had the largest number of grandchildren. When it got to him he announced 12. Some thought he was bragging; others felt that with his flying start (married only two days after the Class was graduated) he should have had twice that number. Twenty-one men were present: F. G. Ashton, A. F. Bemis, S. A.

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Breed, H. N. Dawes, F. N. Dillon, F. W. Fabyan, W. S. Forbes, H. A. Gilson, G. B. Glidden, A. L. Kendall, F. H. Keyes, W. F. Lamb, E. I. Leeds, F. F. Low, H. A. Morss, A. S. Pevear, F. D. Smith, W. I. Swanton, J. F. Tomfohrde, C. W. Taintor, and J. S. Wadsworth.

Our European class correspondent, Charles G. Waitt, who since his retirement from active business has taken on, as an avocation, that of continental correspondent for *The Times*, and certain other London and New York newspapers, now spends the greater part of his time traveling and observing conditions in Europe, returning to Boston for brief visits of a week or so several times each year. Excerpts from a recent letter to the Class Secretary regarding conditions he noted during the past summer are of particular interest at this time.

"To an American traveler in Germany there are many strange contradictions if he sees below the surface. Everywhere in village, city, or open country there are outward signs of industry, frugality, and plenty. In the rural districts bounteous harvests are to be seen. The stores are crowded with shoppers and no beggars are seen in the streets. This is the picture as seen on the surface.

"To be sure, the farm crops in Germany are at the moment excellent. No beggars are to be seen on the streets because Hitler has conscripted all the unemployed and put them in labor camps and to work on building highways and other governmental projects and has issued stringent laws to others prohibiting begging in the streets. Those so conscripted receive their bed and board but practically no money and in this way Hitler has greatly reduced the number of the unemployed. The factories are also working full time at extremely low wages, turning out, principally, munitions of war. Actually Germany is poor, very poor.

"To prevent the flight of capital, stringent laws, which are strictly enforced, prevent any person taking out of Germany more than ten marks, or about \$4.00 in American currency. This applies not only to Germans but to all travelers who may even pass through Germany on pleasure or business. To prevent confiscation of his traveling funds, each traveler must obtain from the official at the frontier on entering Germany a certificate stating the amount of funds he is taking into Germany and this certificate is to be surrendered and the funds checked up on leaving the country at the frontier. This procedure is absolutely imperative and must be obeyed.

"There is, however, much pleasure to be had in a trip through Germany. The German people are good at heart, lovers of peace, and, as a mass, are loyal to Hitler. The streets are clean and each house has its flower garden. There is paint everywhere in Germany except on her women. Only in the hotel lobbies where foreigners congregate does one see 'made-up' women. Only the 'scarlet woman' in Germany is painted and the German people find it difficult to respect

the tourist women whose faces are rouged, whose lips are carmined, and who ape the heathen women by staining their finger nails. The German people are kind, industrious, efficient, and frugal and we as Americans have much to learn from them.

"Passing south to Austria, we come to Vienna, the second biggest city in central Europe, with almost two million inhabitants. The writer spent two weeks during the festival season in June this year in Wien and found the city, as always before, full of new interest that intrigues new visitors and holds old ones. Here the people are even more friendly and kind and strive to anticipate the wants of their visitors, serving with a smile and making the visitor feel he is genuinely welcome.

"However, if the people of Germany are poor, those here in Austria and Hungary are more so. The writer visited some of the old, privately owned estates in the suburbs of Vienna. The owners still bravely try to preserve the glory and dignity that was theirs in former days, but the uniforms of the butlers and other liveried servants were threadbare and worn. They have no money to buy new ones and the ones they wear are not at all in keeping with the position and station in society of the owners. 'But what can we do?' they ask. 'Times are so bad.'

"Vienna is even now a truly beautiful city. The birthplace of Johann Strauss and other great musicians, its greatest pride is its glorious past, its architectural and scenic beauty, and its arts. Living is cheap and the wines and food especially good. Let all Americans who can, visit Wien and also Budapest, which is a few miles down the Danube.

"Passing further South into the Sud-Tyrol, one enters a truly delightful county. It now belongs to Italy and the province of the upper Adige is especially to be commended. There one has the mountains and valleys as beautiful as and much wilder than those of Switzerland, and fine roads on which to make innumerable excursions. Living is cheap and the food is such as one finds neither in Switzerland nor in Italy further south. Here is a land flowing with milk and butter, poultry, vegetables and fruit, and rich delicious wines.

"Here is another picture. Crossing into France on my way to Spain, I went to the Spanish consulate one Friday afternoon in order to obtain a new visa, but found that the consulate was not open in the afternoons. Saturday I went again in the forenoon, but discovered it was a *fiesta* and the consulate would not be open at all. Sunday was another *fiesta* with similar consequences. Not wishing to waste more time, I proceeded to Sete, in the south of France, hoping to obtain my visa at the consulate there. Arriving at the consulate, I explained my desire to leave on a certain train. The clerk took my passport and I was invited to sit down and wait. After waiting for nearly an hour, I asked the clerk in charge, who was reading a newspaper, how much

longer the wait would be, for although my name was Waitt, I did not like to wait as I must catch my train. The clerk replied the Consul was very busy and he did not know. Then he resumed reading his newspaper and I insisted upon my right to a more definite answer and he then informed me that the Consul had not yet come down — it was nearly noon — and that he did not know when he would come. Desperately I recovered my passport and left for the frontier. I had hoped that the fact that its Spanish registry was still valid, although the visa was expired by a few days, together with an explanation of the circumstances, might get me by. Nothing doing, I was sent back and this time was successful in obtaining a visa at Port Vendres after another lost day and this was so far only the approach to Spain.

"While in Alicante, I received a check from a Boston bank drawn on a Barcelona bank and presented it at the Alicante branch of the same bank. It was taken but could not be cashed until advices had been received from Barcelona. After waiting three weeks, the check remained uncashed, notwithstanding letters and telegrams.

"In desperation I came to Barcelona, but the clerk to whom I was directed refused to give any information about the check because, notwithstanding my passport and other documents of identity, the clerk could not be sure that I was the man named in the check. I would have been obliged to leave Spain minus the check had not the manager of a rival bank, which had taken the matter in hand, advanced me the face value of the check from his own pocket.

"My experience is similar, so I have found, to that of many others who have waited in Spanish banks to have some simple banking operation performed and that is one nuisance of traveling about in Spain. Hordes of petty functionaries, such as bank clerks, steam and rail booking clerks, railway, train, and bus conductors, telegraph agents, and so on, to say nothing of their masters, have not yet arrived at the faintest notion that the public has rights, and all of them are woefully incompetent."

Waitt has made a great number of transatlantic crossings, having traveled by practically all the express boats of the several lines. Of them all, his choice is the *Europa*, on which he has made 12 round trips and concerning which ship he writes as follows: "It is interesting to note that the steamer *Europa* of the Norddeutscher Lloyd Line completed her 100th round trip when she arrived in New York from Bremen on August 1, sailing again for Bremen August 3, 1935. By this voyage, she completed 750,000 sea miles and carried 215,000 passengers over to Europe from New York. The good ship carries 2,000 passengers and 1,000 crew. She generates enough electricity to supply a city the size of Heidelberg.

"During the time she has been in commission, she has taken on for consumption 495,000,000 pounds of meat; 4,400,000 pounds of shell fish and fish; 55,000,-



1893 Continued

000 pounds of vegetables, in addition to 13,200,000 pounds of potatoes and 4,400,000 pounds of fruit; 11,550,000 eggs; 700,000 quarts of milk; and 3,300,000 pounds of flour and cereals. She has in her power plant used up 2,200,000 tons of fuel oil in propulsion and internal uses.

"Other ships are larger and others are as beautiful in interior decorations, and so on, but it will be difficult to find another large transatlantic liner that has such an enviable record in respect to the number of passengers safely carried in the same length of time, all of whom are delighted with the service given by the personnel of this remarkable boat."

Several members of the Class visited Europe the past summer. Farwell Bemis and a portion of his family spent some six weeks in England where, as temporary "lord of the manor," he occupied an old, Thirteenth-Century, feudal estate not far from London. Charles M. Spofford and Mrs. Spofford spent the months of July and August touring Italy, Switzerland, France, and England. On their homeward voyage they found, as fellow passengers, Mr. and Mrs. Henry A. Morss, who likewise had spent the summer abroad.

It is a sad duty to record the death of two members of the Class, Miss Elizabeth S. Mason and Joseph Y. Parce. Elizabeth Spalding Mason, for many years a member of the Smith College Faculty, died at her home in Northampton, Mass., on September 11. She received her bachelor of arts degree at Smith College in 1887. She was a special student in chemistry with the Class and for three years served also as secretary and research assistant in chemistry and household economics to Mrs. Ellen H. Richards. In 1894, Miss Mason began her teaching career at Smith College as instructor in chemistry, later serving as assistant professor and associate professor, until her retirement in 1931.

Joseph Yale Parce, who retired not long ago from the position of director of industrial arts of the Denver public schools, died at his home, 2057 Fairfax Street, Denver, Colo., April 18. Following his graduation with the Class in the Mechanical Engineering Course, Parce spent two years with the American Tool and Machine Company of Boston on general construction work and designing. In 1895 began his life work of teaching in the Denver public schools where, until 1918, he was engaged principally in teaching mathematics, mechanical drawing, and shop work at the Manual Training High School and in equipping power plants and shops. In 1918 he was made Director of the Manual Training Department of the Denver school system and in 1923 he reported, for the Thirtieth Anniversary Class Book, that he was in "charge, at present, of 71 shops and of 85 teachers of various kinds of shop work, printing, and mechanical drawing." Later he was given the title of Director of Industrial Arts. Thus for nearly 40 years he rendered a useful and even notable service to the youth of Denver

and its vicinity in educational guidance toward industrial and other vocational lines.

Parce was born at Fairport, N. Y., July 13, 1871. In 1899 he married Miss Inez L. Taggart and they had two sons. Among the organizations with which he was connected are the American Society of Mechanical Engineers, the National Education Association and other associations of educators, the Masonic fraternity, and the Denver Civic and Commercial Association.

The following changes of address are noted: Franklin G. Ashton, Jackson and Moreland, 270 Broadway, New York City; Mrs. Londa S. Fletcher, 6517 Harwood Avenue, Oakland, Calif.; Myron Hunt, Room 1218, 408 South Spring Street, Los Angeles, Calif.; James H. Reed, 150 Newbury Street, Boston, Mass.; Frank D. Richardson, Hudson View Gardens, 183rd Street and Pinehurst Avenue, New York City; Harry H. Thorndike, "Thorn Craig," Bar Harbor, Maine. — FREDERIC H. FAY, Secretary, 44 School Street, Boston, Mass. GEORGE B. GLIDDEN, Assistant Secretary, 551 Tremont Street, Boston, Mass.

## 1896

Bert Spahr and his son happened to be in Boston one day during the summer and called upon the Secretary. Unfortunately, the Secretary was not in his office that day and missed the pleasure of seeing them. — Billy Anderson was in Boston in September putting his boy in Harvard and he made contact with the Secretaries. Billy spent much of the summer, as usual, at his summer home in Biddeford Pool, Maine, and was about to return to Cincinnati. — Butler Ames sailed on the *Bremen* the first of August for a European trip. — Jim Melliush reports that his fortunes have improved in New York City and his health is much better as well. He now has Mrs. Melliush and the children with him.

Myron Fuller with Mrs. Fuller reported arrival in Moscow, from which city they were to depart on September 5 on a 12-day trip across Siberia. They had an excellent passage across the Atlantic on the freighter *Cliffwood*, of the American Scantic Line. They saw the wreck of the Swedish motor ship *Sunnaren* in the Orkney Islands, and going into Skagerrak, they had the most unusual sight, in these days, of the four-masted bark *Archibald Russel*, one of the few remaining square-riggers. A day was spent in Copenhagen and a call made at the port of Edynia in the Polish Corridor before reaching Helsingfors. Fuller's keen observation indicates that the depression seems to be pretty well over in the Scandinavian countries. At Leningrad they toured the city and islands in a Lincoln car. Conditions seemed to be much improved. Food is abundant, but the people are still wearing cheap and shabby clothes. At the Astoria Hotel, their room was big and magnificent, with French style furniture and lavish ornaments of alabaster and gold, and splendid and abundant food in the dining rooms. An enormous parade

occurred on the day of their arrival, a celebration of International Union. It was quite kaleidoscopic, with the varied uniforms, the club organizations, young women in shorts, and thousands of men and women in working clothes. They traveled to Moscow in a two-compartment sleeper. The Hotel National in Moscow was even more imposing than the hotel in Leningrad. The bath had an enormous tub, seven feet long and three feet deep. Meal hours — breakfast at nine, dinner at two, tea at six, and supper at eight — were a little bit awkward. Moscow is now a modern city with already 122 museums and more in preparation. The new subway stations are finished in marble of different colors and the subway is much superior in color and cleanliness to those in Boston and New York. Many enormous apartment houses have been built for housing workmen. Of course, everything is owned by the government. Most stores are small and carry only the ordinary goods, but some large government shops taking foreign money have good stocks. Loot from the Revolution is still being sold. — CHARLES E. LOCKE, Secretary, Room 8-109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, Assistant Secretary, 24 Garden Street, Cambridge, Mass.

## 1897

We announce with regret the death of our classmate, George Lane, who was superintendent of the Ludlow Manufacturing Association. He was a conservative and conscientious, hard-working fellow, and the Ludlow Manufacturing Association has a great loss in his death.

We hear with interest that Joseph Bancroft is one of three trustees in bankruptcy of the National Department Stores, Inc. — We note with pleasure that Wilfred Bancroft is now Treasurer and General Manager of the Lanston Monotype Machinery Company of Philadelphia, which is a position of increasing responsibility in an outstandingly successful concern in the type-setting machine industry. Some years ago, Wilfred's father held this same position and was the one responsible for the successful development of the monotype. — Ezekiel C. Sargent was recently appointed by Mayor Thomas F. Burgin of Quincy, Mass., to the post of Commissioner of Public Works of that city. Mr. Sargent was formerly in the contracting business and for 20 years served as City Engineer. — JOHN A. COLLINS, Jr., Secretary, 20 Quincy Street, Lawrence, Mass. CHARLES W. BRADLEE, Acting Secretary, 261 Franklin Street, Boston, Mass.

## 1899

The joint reunion with '98 passed off very successfully at Samoset House in Plymouth, Mass., on June 1 and June 2. The Class of '99 was represented by W. S. Newell, George Priest, B. S. Hinckley, Miles Sherrill, F. B. Stearns, and Arthur Brown. Mrs. Newell, Mrs. Stearns, and Mrs. Brown were also present, and to them was due much of the success of the dinner. There were three times as many '98 men present as '99, but no '98 wives.



1899 Continued

The high light of the reunion was the dinner at which all sat down together around one long table. George Treat '98 was in a generous mood and provided cocktails to all who would accept them, and as many as they would accept. The food was excellent, but the service was erratic. Waitresses would appear from time to time, take orders, and then retire. After long waits, they would reappear with dishes, usually containing something that had not been ordered. However, this caused amusement rather than annoyance, for everyone was happy and we had the night before us.

After the food was disposed of, Blanchard '98 opened the talk proceedings with a short address and then called on Arthur Brown for remarks. He says he can't remember saying anything original, but claims to have read the letters of regret from the few members who wrote such letters. There were a few. I wrote one myself, as business called me to Europe a few days before the reunion was scheduled.

After the letters, each man present gave a brief history of his career since leaving the Institute. This was a most happy idea and the results were extremely enjoyable. Speakers stressed only the high lights and put emphasis on humorous incidents and aspects.

Among the bits of information gleaned from '99 members was the news that George Priest has retired from active business in accordance with a plan formulated long ago. Ben Hinckley has also retired from the coal business, having sold out his interest in his company. Miles Sherrill has a delightful old Cape cottage in Marshfield. The house is 150 or 200 years old and has been refinished and furnished so as to preserve its antique quaintness to the full. There is a barn, connected with the house, which has been converted into a large, one-room studio or living room, which is altogether satisfactory for comfort of the body and eyes.

W. S. Newell's son was graduated from Tech the day after our reunion. Harry K. White and C. A. Watrous are both on the architectural staff of the Federal Housing Administration. Lew Emery spent the summer in Europe. I have an engagement to meet Norman Rood and settle the affairs of nations, if we can ever find a mutually convenient time.

It is with regret that I announce the deaths of the following class members who passed away late in 1934 and in 1935: William Joseph O'Leary, Walter Whitney, Timothy Joseph Driscoll, Frank James Huse, Henry George Johnson, Henry Grant Morse, Jr., Horace Webster Soule. — W. MALCOLM CORSE, *Secretary*, 810-18th Street, Washington, D. C. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston, Mass.

## 1900

Captain Frederick H. Cooke, U.S.N., until recently public-works officer at Manila, reported for duty at the Charlestown Navy Yard on September 1. Captain Cooke has been in the service over 31 years.

It is with regret that we report the sudden death on September 17 of Robert R. Lingley, 57, at his home in Belmont. Mr. Lingley was born at Westfield, N. B., and was a graduate of M.I.T., Course II, with our Class. He joined the State Guard in 1917, and was made Lieutenant Colonel of the 101st Engineers in 1929. He was a member of the academic board of the Massachusetts Military Academy, and taught tactics. He also was a prominent engineer. He leaves his wife and a son, Robert, both of Belmont. Funeral services were held at St. James Episcopal Church, Massachusetts Avenue, North Cambridge; burial at Belmont Cemetery. Bob had recently returned from the military maneuvers at Pine Camp, which he attended in his capacity of Lieutenant Colonel.

At the meeting of the Board of Directors on August 27, Leigh S. Keith was unanimously elected Secretary of the Western Society of Engineers to succeed Edgar S. Nethercut, who retires as Secretary Emeritus, effective on September 1. Mr. Keith is very well known in Chicago engineering circles and has been unusually active in Western Society affairs for more than a decade past. He brings to his new position both a long background of engineering experience and an intimate knowledge of the organization and policies of the Society. Mr. Keith was educated at the M.I.T., graduating in 1900 in electrical engineering. During the next nine years he served the New York Telephone Company as engineer in charge of central office installation and special assistant to the chief engineer. While engaged in these duties, he made extended studies of the comparative merits of automatic and manual telephone systems. In 1909 he came to Chicago and joined the firm of McMeen and Miller, consulting engineers, ultimately becoming managing engineer and partner. Mr. Keith remained with this organization until shortly after the entry of the United States in the World War, at which time he joined the service with the commission of Major and later Lieutenant Colonel, attached to the general staff at Washington.

After the War he was associated for two years with J. G. Wray and Company as special engineer. He opened his own office in Chicago in 1922 as consultant on public utility and industrial matters. He has also been connected with the Cook Electric Company of Chicago as Vice-President and Director. When the Illinois state organization of the CWA was formed, Mr. Keith joined the staff of Mr. Frank D. Chase and served ably on that organization until its functions were taken over by the Illinois Emergency Commission. Since that date he has been a member of the staff of the administrator of the work and rehabilitation division of the I.E.R.C., but resigned this position on September 1 to assume his new position with the Western Society. Mr. Keith held the office of Treasurer of the Western Society for four years, from 1928 to 1932, and Vice-President for the succeeding three years. He has served also on many committees, and through this service

brings to the secretaryship very unusual qualifications for his new post. In addition, his wide acquaintance and friendship among the members of the Society assures him a cordial welcome to his new duties. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

## 1901

The data sheets for class news are coming in with interesting items for The Review. If you have not sent yours in, please do so immediately and in this way let your classmates hear from you. — The Alumni Association has just published a very interesting brochure on the late Allan Winter Rowe. The foreword says: "To record in appropriate and permanent format some account of his life, particularly that part of it which was devoted to the M.I.T.; to testify to the affection and admiration that abide in the hearts of his friends; and to perpetuate his ideals and standards — these are some of the considerations that dictate the publication of this brochure on Allan Winter Rowe and that govern the selection of the tributes that are its contents."

A. J. Eveland, field engineer and geologist with R. Potter Campbell, Inc., of New York, is in Mexico examining mining properties for his company. Frederick G. Clapp, another geologist of our Class who travels extensively, writes: "The principal news I have to relate of myself for the present year is of a journey on professional matters to the Island of Haiti (or of Santo Domingo, as it is sometimes called). The first two months of my absence in the spring were spent in the Dominican Republic (of which Santo Domingo is the capital city) and the third month in Haiti (with headquarters at Port-au-Prince, its capital). Three weeks, commencing the latter part of July, were spent with the family at our summer home in Duxbury, Mass., and the following week in a 'hike' over a part of the Green Mountain trail in Vermont, accompanied by my brother, Clifford B. Clapp."

Joseph D. Evans, in an interesting letter to your Secretary, says, in part: "We all felt very keenly over the death of our former classmate, Allan Rowe. Except for members of our Class that I had met when I was in New York, I think in late years I have seen Allan more than I have any other member. He was a prince of a fellow, and I can easily understand how difficult it would be for any other member of our Class to officiate as Class Secretary and endeavor to handle the work as ably as he did. Allan was a genius who stood in a field entirely apart from others. The many personal things he was always doing for his fellow men, particularly members of our Class, will remain with us for all time as very valuable and cherished thoughts." Evans is now located in Omaha, Neb., and is State Engineer Inspector, PWA, for South Dakota and Nebraska. This position entails: "Supervising all construction work coming under the direction of the Federal Administration of Public Works, South Dakota and

1901 Continued

Nebraska, including the construction of schools, buildings, hospitals, bridges, auditoriums, gymnasiums, sewage disposal and sanitary sewers, water filtration and water mains, water tanks, street improvements, court houses, city halls, insane asylums, irrigation and power developments. Platte Valley Public Power and Irrigation Project, estimated cost \$9,700,000, is under construction and about 100,000 cubic yards of earth and 2,000 cubic yards of concrete are being carried on daily. Loup River project, Columbus, Neb., estimated cost \$8,700,000, is under construction; total staff, including Omaha office and field inspectors, 61."

A recent issue of the *Christian Science Monitor* contains an excellent picture of our "Coed," Anna Gallup, and describes her work at the Brooklyn Children's Museum, which, it is said, is the first of its kind in the world. The following is taken from the article: "Under the guidance of Anna Billings Gallup, this museum, opened originally as a small adjunct to the Brooklyn Museum and designed primarily for the use of teachers in teaching natural sciences to children, has increased its scope and become a model for similar institutions in many parts of the world. Miss Gallup, who has rounded out her 33rd year of service, was awarded a gold medal by the National Institute of Social Sciences in 1930 for distinguished service to humanity as curator-in-chief of the Brooklyn Children's Museum. She was well prepared for leadership in the career she has worked out at the museum. Born in the small town of Ledyard, Conn., she studied biology at the M.I.T. and was instructor of botany and zoölogy at the Rhode Island College of Education, working with normal-school students and teaching children of all ages. Because of her rural background, she was acutely conscious, when she came to Brooklyn, of what city children lacked in natural surroundings. Her talks with the few children who came to the museum in its early days and their eager response convinced her of the potentialities of the direct service for children she has since built up at the Brooklyn Children's Museum." — ROBERT L. WILLIAMS, *Secretary*, 109 Waban Hill Road North, Chestnut Hill, Mass.

## 1903

Since the last news went in to The Review, the most important happening was the first Alumni Day under the new plan, with open house, receptions, teas, and a grand banquet with a Pops Concert at Symphony Hall. Professors Swett and Howard held open house in their respective offices, and Swett served your correspondent with cakes, but the tea was all gone by the time we arrived. At the banquet, ten men reported: Bradshaw, Cushman, Danforth, F. A. Eustis, Haskell, F. B. Jewett, King, Mitchell, Potter, and Yerxa. Several had not been to a reunion for many years and were disappointed in not seeing more of the Boston members. We had a fine time checking up on conditions, families, jobs, and

experiences, and many were the questions beginning: "What has become of . . ." which were hurled at the Secretaries. In most instances we could give an address and in some we could add a bit of personal information derived from the letters we have had during the past two or three years. We heard of Loughlin's intelligent dog; we learned of a rumor (yet to be confirmed) that Harry Stiles is at last married; and we were informed of changes of location of Underwood to Youngstown, Ohio, as assistant to the Vice-President of Youngstown Tube and Sheet Company, and of Gilker to Dallas, Texas, as traffic engineer of Southwestern Bell Telephone.

Mitchell had an interesting article, with a fine photograph of himself, in the June 8 number of *Electrical World*. — Morse was presented with a "Book of Appreciation," containing nearly 50 personal letters of congratulation on his completion of 10 years' service as manager of Indianapolis Water Company on May 31. — Hewett Crosby and John Cheney had jobs with the NRA in Washington, D. C., in June, the former as assistant division administrator, and the latter as a deputy administrator. — Bryan writes that the FERA, PWA, and WPA have finished all the engineering work that engineers might expect to do in central Pennsylvania for the next ten years.

F. A. Eustis has just returned from a two months' trip through Europe and reports many interesting matters, such as the inference that England seems to be farther along the road to recovery than other countries; unemployment in Germany has been reduced from eight millions to one million, with only a half million going into the army; and much talk of war everywhere he went. He was glad to get out and home again.

The second generation of '03 is still increasing, and we hope to have a list, a long one too, by the time the next issue comes out. If you have not let the Secretaries know about your share, please do so at once. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 89 Broad Street, Boston, Mass.

## 1905

By now all '05 men on the *Flivver* list have received a copy of the Thirty-Year Reunion Booklet. Those who attended know that they enjoyed just about the best '05 Reunion ever; those who didn't are regretting it all the more. If you aren't on the list, there are a few spare copies, but the penalty is that to get one, you'll have to write us at least enough about yourself, your job, your family, your hobbies, to help the new Secretary with news for the next few issues.

Judged by the promises made when he was elected at Old Lyme, there should never be any scarcity of copy. Everyone was sincere, but your Secretary has been in the selling game long enough to know that this is a busy old world and that he will have to dig it out every month just as Ros and Grove did. Just the same it's your Class Notes. Make yourself a local

reporter and write us semi-occasionally or oftener. As Walter Winchell would say, "Let's get to the flashes."

On the front page of the New York *Herald Tribune* of Sunday, July 7, is a picture of the House Ways and Means Committee, taken in front of the White House, and the little fellow on the right "carrying the bag" and with hair apparently thinned by brain-trusting is Lovell H. Parker, I, tax expert. Here's a chance for '05 to get their perplexing tax problems solved, perhaps abated.

Sid Strickland, IV, is Chairman of the Massachusetts State Board of Housing. We have a copy of his speech of February 7, 1935, before the Senate in advocacy of a bill granting broader powers. We have been trying to get Sid by phone to learn more of his work, but just can't seem to catch up with him. Perhaps he's trying not to be late to committee assignments. At any rate, this may intrigue him into giving us a story for the next issue.

Speaking of government workers, Andrew Fisher, Jr., X, is tied up with Mert Emerson '04 on some sort of NRA work. Unlike Sid, he has been in ten times to tell the Secretary all about it and all we have found out to date is that the pants he wore at the Reunion were made in England and the suspenders in Czechoslovakia from his own design. Also he told us who is to be the next Governor of Massachusetts.

Reading the questionnaires submitted by the fellows who attended the Reunion, we wonder just why so few '05 men sent so few sons to Technology. Some of the excuses are pathetic, but it remains for Ralph Whitcomb, I, to "show 'em up." Having no sons to send, he sends his daughter, Peggy, across the Atlantic to enter the freshman class this year. By the way, Ralph's daughter, Sally, and your Secretary's daughter, Marjorie, will be graduated from the Massachusetts General Hospital Training School next February.

Mildred Wheeler Tompson, VIII, Box 355, Route 4, Attleboro, Mass., returned the card asking about attendance at the Reunion with this question, "How can I, if the Reunion is stag?" That's one for the book. We'll have to ask Ripley. Just the same, in spite of opinions and prejudices on the part of several (your Secretary included) against the stag feature, 50 men at the conclusion agreed that it was best that way, not that the wives couldn't have been "good fellows" but that 50 fellows had a perfectly wonderful couple of days of relaxation from everything.

John A. Meggison, II, in sending his regrets at not being able to attend the Reunion writes: "Very probably none of the boys remember me, but nevertheless give them all my best wishes. Some day I may meet them. It would be interesting to meet Sid Caine, the minister, though I do not suppose that he would attend a stag party. Thanks for the mention of the old professors. The seed they sowed has borne some good fruit. In the work of the ministry, my travels took me through most of the states of the Union, but I have never found a more



1905 Continued

desirable location to live in than New England, where I was brought up. The family hope to go there again some day.

"We are having a miners' strike in the tri-state district just now, which has cut down the power load in our plant at Riverton to some 5,000 or 6,000 kilowatts, though the water being plentiful in the district, the water plant carries most of the system load which makes the steam plant at Riverton just a standby for the time being."

Herbert S. Bailey, V, accompanying his regrets, says: "This business of trying to make something for the Sunkist orange growers of California out of the oranges that they cannot ship to market in boxes seems to have new problems every day. It has been nearly three years since I have had any regular vacation, but that is not so great a hardship as might appear when one lives in Southern California."

"From my office window, where I am dictating this little note, I can see the snow on the top of Old Baldy, which is less than an hour's drive from my desk, and this afternoon if I were not going to a Sigma Xi luncheon at Pomona College, I could hop in the car and be in the Pacific Ocean in just about an hour after leaving home. So you see we have the playgrounds all around us. I greatly enjoyed last night reading the roster of '05 and noted that there are eight or ten of us within 50 miles of Los Angeles. Perhaps we can have a little reunion of our own one of these days, even if we cannot get the rest of the Class to come out here for their next celebration." If Bailey has read the July class notes, he has probably gotten in touch with Henry Ayers, VII, by now and planned to corner this citrous juice market. The only theory that prevents having the next reunion at Los Angeles is that we've already engaged Boxwood Manor at Old Lyme.

Hiram L. Walker, II, after stating like regrets, says: "Have been continuously with the Lanston Monotype Machine Company since leaving Tech. Married in 1913 and have one boy, 17, graduating from high school this year. Would like to meet any '05 men visiting Philadelphia to renew old acquaintances." Pretty good for Roy. He and the Secretary commuted together for four years while attending the Institute, spent a couple of months together in Philadelphia immediately after graduation, and this is the first news in 30 years. Come again.

Bertrand L. Johnson, III, after expressing the unanimous disapproval of the Class at Ros's intention of resigning as Secretary, tells of writing a short introduction to the analysis of numeral statistics, "but don't know what is going to become of it." Apparently it was published by the Bureau of Mines as Information Circular 6830, "Minor Mineral Fertilizer Materials," by B. L. J. as Associate Scientist, Rare Metals and Nonmetals Division, Bureau of Mines.

Bill Motter, III, reports having dug up Ned Jewett. His address is 69 Glen Road, Tuckahoe, N. Y. Bill adds about the Reunion: "I have felt 20 years since."

Grove Marcy, II, said it made him feel 15 years younger. Evidently the next party should be at some kindergarten.

Henry Stevenson, II, who is with Davis and Furber, North Andover, Mass., tells of locating Robert Bixby, II. Bob is with Bingham's Metal Shop, Lawrence, Mass. — Seems to be all Course II, but a press clipping tells of a testimonial dinner given George C. Thomas, II, General Superintendent of the United Shoe Machinery Plant at Beverly, by the workers, in recognition of his having completed 10 years as superintendent.

A note from Ros says that Frank Payne, XIII, went to Europe for his Crane Packing Company in May, caught the "flu" in London, and got back home as fast as he could. Whether he arrived or is still at Ellis Island is not known at this writing.

The July Review reported that Bert Files, I, had just bought a Class "O" boat to race this summer. And then apparently foreseeing results, he added, "My young son will do most of the sailing." Boston *Herald*, June 29, reports a race of Class "O" boats on "ladies day" with Bert's *Pol Pol* coming in in ninth place. Evidently the young son isn't much of a sailor. Or is it *Pol Pol*?

Also in the July Review we learned sadly of the illness of Bill Keen, V. Those of us who saw him at "Pops" were happy at an apparent improvement and his confidence of ultimate recovery. On checking up with his relatives in Malden the night before going to press, we learn that his progress was impeded by the sudden death of his mother and that he was on a sea voyage in a further attempt at recovery. Our sympathy, Bill, and several hundred classmates pulling for your complete recovery. Walter Eichler, II, is in charge of machine design with the Ludlow Manufacturing Associates, Ludlow, Mass. Couldn't make the Reunion as he had a big real estate deal on somewhere in New Hampshire. Still unmarried and commutes to Boston for week-ends.

Dick Senger, III, has this to say about the airplane trip to Chile, reported briefly in the July Review: "It was quite an experience flying as far south as Santiago, Chile, and returning by plane. The only reason I did it was to save time, as on a trip of this kind one can save several weeks by flying, over the rail and boat route. I left Salt Lake by plane for Los Angeles early in March and a couple of days later started out for Chile, making daily hops as follows: First day, Los Angeles to Mexico City; second day, Mexico City to San Salvador; third day, Cristobal, where I waited a day to catch the south bound plane; next hop was to Quayquill, followed by hops to Lima and Antofagasta, Chile. I later took the Chilean National Lines from Antofagasta to Copiapó and from Copiapó to Santiago. I spent a month in Chile fooling around on company business. On the flight north, it was a day's flight from Cristobal to Kingston, Jamaica, another day from Jamaica to Miami, about eight hours from Miami to New York. I later flew back from New York to Salt Lake. I have not

counted up the miles I flew, but I think it is somewhere between 16,000 and 18,000.

"I can tell you all about the merits from the passengers' point of view of the many types of airplanes — Boeing, Lockheed Electro, Douglas, Sikorsky, Amphibian, Ford, Fairchild, and a tiny Stinson. I would really like to own a little Stinson myself, but will hold back, waiting for further improvements for private flyers. I did not take the flight across the Andes but I understand it is a magnificent trip. At Cienfuegos, Cuba, I saw one of the big Clipper ships, which is certainly a nice-looking plane. Our pilot told me it was the same type Clipper which had made the trip to Hawaii the day before. I will always fly by preference if I want to save time. One gets rather distorted ideas of the countries flown over and one is frequently above the clouds and cannot see much of land."

"The Pan American service in South America is excellent. They or associated lines run from Los Angeles, through Mexico, across Central America, across the Panama Canal, down the west coast of South America to Santiago, across the Andes to Buenos Aires, up the east coast to Barranquilla, Colombia, and north to Miami; they also make the connection between Barranquilla and Cristobal. Their pilots are all Americans. They are fully equipped with pilots, co-pilots, pursers, as they call the stewards, and, of course, have ample radio communication, not to mention excellent planes which are kept up in splendid working order. The slower planes are gradually being replaced with speedier ones, which is fortunate for the passengers, because, in the future, instead of having to get up at four in the morning to grab a breakfast and catch a plane, you can leave several hours later, providing they do not change the present stations, which I think would be very difficult to do, as towns are few and far between down the west coast of South America."

Which reminds us that with the questionnaire returned by Elmer Wiggins, V, was a photograph (24" x 36") showing the Flying Wigginses — Ruth, Kathleen, Elmer, Jr., and "Wiggy," dressed in their Eskimo suits, and with it an advertisement of E. W. Wiggins, Airways, Inc., distributors of all the planes mentioned in Senger's letter, airports in Boston, Canton, Leominster, and Providence, student instruction, aerial photography, and so on. Your Secretary, perhaps because of unenthusiasm over flying, would say that it's a mighty good-looking family, anyway.

While on the subject of aviation, let's mention a news item noted in a New Hampshire paper to the effect that Harry N. Atwood, II, had just started production at his Milford factory of a mammoth order for a small plane to sell under \$800 for pleasure driving. Harry Atwood pioneered aviation so long ago that when he brought one of his first hydroplanes down in front of the Secretary's cottage at Lake Winnepesaukee, the natives started running for the mountain caves.



## 1905 Continued

Harry also pioneered for such a short time at Technology that he is best known through the newspaper publicity of his accomplishments in aviation.

Russell Willson, for a brief period with Course I, writes: "While I entered Technology in January and did not return the following September, I have always valued my rather slight connection with the Class of 1905. As a matter of fact, however, entering as I did in January when most of the groups had formed and having a year's work to do in four months, I fear that I did not know any of my classmates well.

"With regard to my recent years in the Navy. In 1927, I went to Rio de Janeiro, Brazil, as a member of a naval mission of 17 officers, who were employed by the Brazilian Government to organize and train their navy. Queer to say, our classmate, W. A. Hall, was also a member of this mission. I was there three and one-half years and found it a thoroughly interesting and well-paid appointment. Brazil is the United States' best friend in South America. After leaving Brazil, I was in Europe for three months and then had command of a division of destroyers of the battle fleet on the Pacific Coast. From 1932 to 1935, I was on duty at the Naval Academy as Head of the Department of Seamanship and Navigation. Just last month I have taken command of the U.S.S. *Pennsylvania*, Flagship of the U. S. Fleet, and at the present moment, we are on our way from San Francisco to Honolulu in the second phase of the Pacific Maneuvers, about which the pacifists have been 'squawking' in the papers. The Fleet will be cruising most of the summer and after the first of September will be based for the winter at San Pedro, Calif. (Los Angeles Harbor). If you, or any of your friends, are out in this part of the world, I would be very glad if you would let me know and I would arrange to have you come on board, if you care to."

Sidney L. Cole, II, reports that he's a grandfather but fears that some of the boys will spoil it all by reporting that they're in the great-grandfather class. Sorry you couldn't have been at the Reunion, Sid. You'd realize that there are at least 50 kids left.

It is the duty of a chronicler to report news as it comes. It isn't always pleasant. It is hard to tell you about Charlie Hawkes, II. The life of the party at the Reunion, and apparently in good health, he was struck down shortly thereafter by some mysterious and at present undiagnosed malady which caused temporary loss of memory. His case was studied in several Boston hospitals without complete diagnosis and he has returned to his family with a fair chance of full recovery of his mental faculties. Charlie has had a brilliant record in the sales-promotion field, has received national recognition and awards frequently, and was (temporarily, we hope) pulled from his chosen work prematurely by "one of those things." Grove Marcy has stood by, a tower of strength. Your Secretary has tried to help just a bit by instructing

his daughter, on night duty at the hospital where Charlie was under observation for several weeks, to do just a little more than her best for '05.

A notice from the Alumni Office allows the inference that there has not been previously reported the death of T. Breckinridge Cabell, VI, of Jackson, Miss., on January 11. Clippings from a Jackson paper tell of the esteem in which he was held in the business, social, and religious life of the city. He left a widow, two sons, and a grandson.

All '05 men will sympathize with R. D. Emerson, IV, in the loss of his wife. Ralph is still with Codman and Despradelle, architects, of Boston.

Some of the Class will remember Lowell E. Smith, with Course III for a while. His death occurred at Everett, Mass., in June. After leaving Technology he entered the U. S. Mail Service, from which he retired after 28 years of service.

R. M. Harding, I, division manager of the Georgia Power Company, Columbus, Ga., lost his father, E. W. Harding, of Melrose, Mass. The same misfortune befell William P. Bixby, II, whose father, Dr. Josiah P. Bixby, of Woburn, Mass., has died. Bill has recently joined the Boston-Delco organization as sales engineer on oil burners and air conditioning.

These changes of address have bobbed up: Robert W. Seyms, II, 150 San Fernando Way, San Francisco, Calif.; William Green, VI, II, Hoosac School, Hoosac, N. Y.; Dr. Oscar C. Merrill, I, Cosmos Club, Washington, D. C.; C. Huntington Smith, I, 2936 East 132nd Street, Cleveland, Ohio; Ezra Ernest Woodbury, I, 2407 Railway Exchange Building, St. Louis, Mo.; Captain Robert S. Beard, I, 1134 Gral Luna, Manila, P. I.; Captain John H. Flynn, II, Caixa Postal No. 19, Rio de Janeiro, Brazil; Percy A. Goodale, VI, 80 Maiden Lane, New York, N. Y.; Edward C. Grant, XIII, 4273 Tyler Avenue, Detroit, Mich.; Percy H. Physeck, I, 1906 North Steele Street, Tacoma, Wash. — FRED W. GOLDTHWAIT, Secretary, 175 High Street, Boston, Mass. SIDNEY T. STRICKLAND, Assistant Secretary, 209 Washington Street, Boston, Mass.

## 1907

The Secretary regrets to report that he has received no news for this issue of The Review. This dearth is the more disappointing because letters were sent to several members of the Class in an effort to obtain noteworthy information.

The Secretary bespeaks the help of '07 men in keeping this monthly column a continuing repository of interesting news about the Class. This notice is a call for help and an explanation of why no material appears this month. — THE REVIEW EDITORS.

## 1909

The Boston *Traveler* of recent date contained the following interesting article from Nantucket, Mass.: "Visitors can now get corn ground by windmill, for souvenirs, if they wait until the wind

swings into the southwest. Nantucket's 200-year-old windmill turns only when the wind is southwest, so when the wind swings into the east or north, visitors must wait, for the old wheel doesn't turn. William F. Jones, science instructor at the high school, spends his summers as miller.

"In a good, brisk breeze, the old fan sweeps around at a lively clip, 100 revolutions or more a minute. It was built in 1746 by Nathan Wilbur. Clad in cap, overalls, apron, he became a dusty miller of poetry and song. The mill was rebuilt in 1828 with oak timber from wrecked vessels, salvaged by the hardy natives and sold for \$20. The structure became the prized possession of the Nantucket Historical Association. Today it attracts more attention than ever with Jones as the miller, grinding real corn, which is done up for souvenirs for island visitors to take home."

From the Alumni Office comes the notice of the death of Henry R. Putnam, on June 8. Putnam had been living at Rye, N. Y. — CHARLES R. MAIN, Secretary, 201 Devonshire Street, Boston, Mass. Assistant Secretaries: PAUL M. WISWALL, MAURICE R. SCHARFF, New York; GEORGE E. WALLIS, Chicago.

## 1910

The class notes for this month may seem more voluminous than usual, but let your new Secretary assure you that this is not due to his efforts, but solely to the returns from the letters received in making up the program for the Twenty-Fifth Reunion. The following are excerpts from letters received.

Frank Bell: "We have two or three big lettings coming up in Texas in the next month, are already working on same, and will be busy possibly until the middle of June. There is nothing I would rather do than be with you all, but good contracts don't come to the bat often, so I dare not overlook same. Pickings have been scarce in this section the last two years. If at the last moment I get loose, will come, but don't count on me. — See John Fitzwater frequently. He sends his regards; he represents the Foote paving equipment people in the South."

Eldon Clark: "I have a son graduating from Albion on June 3, and I feel that I should be present at this important event in his life. Somehow or other, it doesn't seem so important to me these days, but when we were graduated I suppose we both felt it was important. — It seems impossible for me to realize 25 years have passed, until you consider that I have a boy being graduated, and next year I expect to have a girl graduated from Michigan State College."

Alva B. Court: "My career in the Construction Corps of the Navy has been generally uneventful, but it has taken me around the world a bit, and supplied me with a regular pay check. If any of you are beyond holding a pay check in high esteem, you are no longer in my class."

Dick Goodwin: "I have delayed writing you regarding our reunion with the hope that I could finally arrange to join you, but I now find it is impossible for me

1910 Continued

to get away. — I hope you will all have a fine time and only wish that I could be with you."

Edwin Jenckes: "Have little to say about myself — rather an uneventful life as a member of the metallurgical staff of the International Nickel Company, and me 'what used to be a chemist'!"

Joe Northrop: "I still feel that the hub of the universe will be moved from New England to Texas in the next generation or two; so guess my family is settled here for good. We did not have a bank failure in Houston during the late financial catastrophe; and I understand that conditions around here have remained more nearly normal than in almost any section of the country; although Lord knows, they have been bad enough, even around here. A bunch of about 50 local Tech men met the Dean when he rambled through here last month; and we all greatly enjoyed his visit. — I have a couple of sons in Texas colleges and another some four years old. Do you ever see Johnnie Barnard or any of the other Course IV fellows? I know two other Tech men in Houston beside myself: Bill Humphreville '11 and Arthur Hartwell '09, both connected with the building game."

Louis Rowe: "Our business at this time of the year is especially strenuous, as it is the start of the warm weather and our sales on all types of fans and ventilating equipment are something we are most interested in. — I have been meaning to write to you as a good many others in the Class have meant to do, but, like the others, have put it off from year to year. Suffice it to say, I have spent a most enjoyable period of years with Thompson and Lichtner of Boston on industrial-engineering work in many places throughout the East, South, and Central West, and during that time, had the opportunity to study and learn many methods for solving industrial problems. When Thompson and Lichtner made a contract with the Emerson Electric Manufacturing Company in 1928, I expected to spend about six months here as resident engineer, but it so happened that I joined this organization after our contract expired; and have been with them ever since and now, in the capacity of controller, have plenty of interesting problems to solve."

In addition to the excerpts from letters, the following news of classmates has been received: Mr. and Mrs. James S. Cox announce the marriage of their daughter, Miss Constance Cox, to Mr. Gordon Russell Ellis, which took place August 11. Their engagement was announced in March. — Harold Billings has also announced the marriage of his daughter this summer. Russ Wells visited Boston this last month on business. His son, David, is entering Wesleyan College at Middletown, Conn., this fall. — Jack Babcock's son is entering Tech this fall in Course I. — John Barnard has solved the depression by taking up water-color painting. He has done some fine work in this line and has received very favorable criticism from the newspapers. He had a successful exhibition at the Vose Galleries,

where paintings made on his trip to Guatemala last spring were shown. — Charlie Greene was in Rochester, N. Y., this last month where he met Berg Reynolds about to tee off in a golf tournament. — HERBERT S. CLEVERDON, *Secretary*, 46 Cornhill, Boston, Mass.

## 1911

Our Twenty-Five Year Reunion is definitely set for the first week-end in June, Friday to Monday, inclusive, June 5-8, 1936. At our usual dinner in Boston on the 11th day of the 11th month, details will be discussed and, in the meantime, your Secretary will be delighted to have suggestions from classmates everywhere. Let me hear from you, mates!

The Grim Reaper claimed another of our number in early September, when Bill Burleigh, II, died in Natick, Mass., his native town, after a week's illness. He is survived by a wife, two daughters, and one son, to whom our deep sympathy has been expressed.

Had a fine letter from Admiral Kanezo Goto, II, saying that he still hopes something will make possible his attendance at our Reunion next June. He continues: "As to my business since resigning from the Japanese Navy, I beg to inform you that I first joined the Westinghouse International Electric Company of Japan, which became afterwards Ryobi Denki Shokai, a subsidiary of the Mitsubishi Electric Manufacturing Company, having close connection with Westinghouse Company."

"Two years ago I became the President of Nihon Dempa Kabushiki Kaisha (Japan Electric Company, Ltd.). This company holds manufacturing rights of the Compagnie Général de Telegraphie sans Fil of France and manufactures wireless apparatus and parts thereof. The company also has machine shops and manufactures mechanical apparatus for Army and Navy. The company is not large now, but I hope to see it expand under my management."

"I may add with pleasure that about ten years ago I established the Technology Club of Japan and I am now Vice-President of it. My head is now covered with white and gray hairs, and I have two boys and three girls, the first boy and the first girl being already married. You are quite happy to have such fine and healthy children as you write to me and I congratulate you. Your letter caused me great pleasure and, now that we have established contact again, I hope to hear from you from time to time."

From the Alumni Office we learn that Rudolph Emmel, III, has left Guayaquil, Ecuador, and is now at Casilla 272, Latacunga, Ecuador, South America.

From St. Andrews Hotel, Portland, Ore., A. T. Cushing, I, writes: "I am at the farthest point west which it has been my privilege to visit and am here on one of my regular jobs; namely, to appraise the local stockyard. Johnson, I, '08, is here on the same job."

"We had a very lovely trip here by train from Kansas City and enjoyed the mountain scenery immensely. Family did

not come with me. My girl, 12 years old, enters high school this fall. My oldest boy, now ten, appears to be headed for either Course VI or Course X at Tech, as he is interested and proficient beyond his years in electricity and chemistry."

"I get The Review regularly and am very much interested to learn therefrom what members of '10 and '11 are doing. I expect to be back home by late summer, so my address remains Room 510, 114 West Tenth Street, Kansas City, Mo."

It certainly was thrilling in late August to learn that Luis de Florez, II, won the American seaplane championship for 1935 at Oyster Harbors, Mass., as a result of his outstanding performances at the third annual seaplane meet sponsored by the Oyster Harbors Club. Luis won the altitude race by climbing 1,000 feet the quickest, and excelled in the take-off contest, and was awarded the Edo trophy. Congratulations, Luis!

Eleanor Daniels, daughter of Fred Daniels, VI, has entered Smith College this fall as a freshman. — As these notes are being typed on the second day of the current fall, I am on the eve of departure for my annual trip to the M.I.T. Freshman Camp at Lake Massapoag, Dunstable, Mass., where the incoming "frosh" are initiated into the knowledge of extracurricular activities at Tech. This has come to be one of the bright spots of each year for me.

And in closing, let me again urge that you reserve the first week-end in June and that you write to Dennie! — ORVILLE B. DENISON, *Secretary*, Hotel Bancroft, Worcester, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

## 1912

If you have not already returned the proof of the Class Register sent you by Page Golson, please sit right down now and go through it, to make any corrections or furnish any addresses that you may know. We certainly owe it to Page to back him in this effort, as the first requisite of a successful Twenty-Fifth Reunion is a correct mailing list.

John L. Bray, III, has been made Head of the School of Chemical Engineering at Purdue University. — While in Cleveland at the Machine Tool Show, your Secretary had a pleasant telephone chat with Arch Eicher, XI. Arch is now in the contracting business on his own, and reports progress. As the proud father of two daughters, he starts early and works late. — Carl Rowley was out of town on a business trip to the South, making it impossible to get the latest news on the architectural situation in Cleveland. — Clark F. Higgins, formerly general manager of the Universal Hoist and Body Company, is now general manager of the Metal Products Company, 144 Moody Street, Waltham, manufacturing specialties for the oil trade. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. McGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 330 West 42d Street, New York, N. Y.



## 1914

In traditional fashion this is the one issue of the year when items for class notes are just about zero. Late September, when these notes are written, appears to be just too early for the fall inspiration of those loyal ones who can be counted on for an item now and then. — Roy Parsell is one man who practices what he preaches. Roy, who is with the Winchester Repeating Arms Company, at New Haven, is just now taking his vacation by hunting in Maine. Another Winchester Technology man known to many classmates, particularly from freshman drill days, is Edgar Taft '13.

Captain Alden Waitt, C. W. S., who has developed quite a journalistic reputation in the Army, had a most interesting article in the October issue of *The Military Engineer*. It dealt with the use of chemical agents in demolition operations. — Much of the efficient operation of the electric signs about Boston is due to none other than Arthur Petts, who is engaged in a sign-maintenance enterprise.

A most welcome visitor to Boston recently was R. F. Zecha. If one wants a first-hand story of the textile business in New England, he should hear Zecha speaking "off the record." Did anyone mention processing taxes? — Walter G. Hauser, who for some time has been in the mechanical-stoker field, has moved to Hartford. While handling the same line of equipment, he has added other items and is now prepared to render a complete heating service. From the difficulty the average home builder or owner has in getting really intelligent information on this subject, there should be a good field for specialists. — HAROLD B. RICHMOND, *Secretary*, 30 State Street, Cambridge, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York, N. Y.

## 1916

Plans for our Twentieth Reunion are well under way, and definite date and location will be sent to you in the near future. Please be sure to start making your own plans right now so that it will be possible for you to be among those present.

It was a great pleasure to see a larger number of our Class than ever before at the general reunion last spring. The following were present at all or part of the festivities: Mark Aronson, Don Webster, Bob Wilson, Santy Claussen, Bud Kaula, Hovey Freeman, Dave Patten, Shatswell Ober, Marshall Wellington, Rusty White, Jap Carr, Ralph Fletcher, Bob Naumburg, Dick Fellows, Jack Freeman, Charlie Lawrence, Henry Shepard.

Our Class has had a real loss through the deaths of two of our mates during the past summer. On August 19 Bill Shakespeare died of a heart attack while hiking with his two sons near Gorham, N. H. For the past 11 years Bill has been associated with the Anaconda Copper Company, where he has done outstanding work in developing processes for making copper-plated shingles and an electrolytic process for making a new type of copper

sheet. He was an outstanding man in his local community as well and few of us will be so much missed when we go.

Knight Owen was fatally shot on September 12 by a fisherman at Vineyard Haven. Knight had been identified with the Paine, Webber Company in the security business until several years ago, but recently has been living at his mother's home, where he said he was hibernating until the depression was over. It is certainly very sad to have this happen to Knight, who was so very bright in college and who had such a promising future.

Chuck Loomis writes from Memphis as follows: "I recently had a letter from I. B. McDaniel, who has just been stationed at Atlanta, Ga., for the next four years. Just what a naval constructor does in Atlanta I have no idea. However, my work takes me there occasionally and I am looking forward to seeing Mac and learning what it is all about. I had expected to see Ralph Millis in Savannah this past summer. However, I got there just in time to see a notice that he had been appointed district engineer at Wilmington, Del."

I had a very pleasant visit with Bill Farthing and his wife last June at one of the out-door cocktail gardens. Bill has a fishing shack on the New Jersey Coast that sounds most attractive, but so far I have not been able to accept any of the invitations to visit there.

I also spent a very pleasant hour with Jeff Gfroerer and his wife in Portchester last June. This was the first time I had seen Jeff since he left for Europe six or seven years ago. He looks very much the same and apparently the depression has not added any more gray hairs.

Don Webster and his wife spent part of their summer vacation in West Falmouth. Don reports that everything is going well with him in Palmyra, N. Y., and hopes that some of the class will stop off and see him as they pass through on their travels. — HENRY B. SHEPARD, *Secretary*, 269 Highland Street, West Newton, Mass. CHARLES W. LOOMIS, *Assistant Secretary*, Bemis Bro. Bag Company, Memphis, Tenn.

## 1917

Congratulations to Major F. S. Conaty, listed in the Sunday *Times* Army Promotions as advanced from his previous ranking as Captain.

Also congratulations to another modest gentleman, W. I. McNeill, XV (3). Said McNeill, who for the past six years has been engaged in installation and operation of a uniform cost-accounting system at Colgate-Palmolive-Peet Company's domestic and foreign plants, has been appointed to the staff of the Vice-President in Charge of Manufacturing. Apparently this appointment to the staff carries with it no title or handle to his name such as might well accompany an advancement to a position in which he will be in direct charge of standardization of operations and manufacturing-control work at all domestic and foreign plants of the company. — RAYMOND S. STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass.

## 1918

Our last dispatches, if you recall, were filled with gentle melancholy over Bill Wills' house with accommodations "for future maid." This document cannot repress a spasm of deep regret for the gritty realism of Bill's present misfortune. It finds him both frustrated and bereft. A loutish imposter not only stole the gold medal presented to Architect Wills by President Hoover for his winning house plan, but just to make a job of it, the thief victimized many a Massachusetts architect by posing as the indigent Mr. Wills whose departed glories were attested by the possession of said medal. The plaque was good for a touch of two dollars in almost any architect's office.

Nor was this all. Slogging through the ooze of a whirlwind courtship, the thief married nurse Mary Lunden of Brooklyn on August 21. She was heartbroken and, doubtless, penniless when she discovered that she hadn't married our Bill after all. Furthermore, her diamonds and spare change disappeared with the groom.

The hazards of life are great indeed. The cumulative disgruntlement of such an experience doubtless shook even Bill's glacial calm. The Meecham Associates of Worcester called him on the phone to recover two dollars he supposedly borrowed from one of their employees.

"I got a letter," sez Bill, "from an employee of the architectural firm of Edward B. Caldwell in Bridgeport, Conn. It began by saying: 'You probably don't remember, because you were pretty drunk, calling on me, August 16, and getting two dollars by telling me that you were returning from your vacation and were broke. I gave you the money because you were a colleague; but now I trust you are able to return the loan.'"

"By this time I was a little bit angry, so I not only notified the police again, but sent out a circular letter to the secretaries of every architectural organization in the East. My letters proved fair detectives, because I missed causing the man's capture in Portland, Maine, by only one hour.

"On August 29 I received a special delivery letter from Royal Boston, a Portland architect, informing me that a man answering the thief's description called on him and asked him for a small loan. He refused to hand over the money and the man left. An hour later Mr. Boston received my circular letter warning him that he might be approached by a man representing himself as 'me. I have not heard of the man's activity since then, and I trust I never shall again. I certainly feel sorry for the poor girl he married."

Now if any one of the rest of you birds can work up so eerie an experience for these columns, do let us hear its ominous drum beat!

Professional cards from C. C. Fuller of the Foxboro Company and Sax Fletcher of the J. O. Ross Engineering Corporation (both from the big, wicked city on Manhattan Island) were slipped noiselessly under my door during the summer. Sax



1918 Continued

sez, "If you would stay on the job once in a while, you might see more of your friends. Sol!" Sax, old boy, I was sitting on an iron-hard bench in your outer office at the time, and your secretary didn't even tell me you weren't in, or maybe it was while I was teaching in Harvard Summer School. Now Fuller shows less taint of strenuous Christian virtue in his *communiqué*, which reads: "Sorry to miss seeing you, but vacations are vacations. Look me up when in New York."

How many of our prosperous number rollicked across to Europe and back last summer is not known, but among them were Professor and Mrs. Fred H. Norton, who sailed on the *Scythia* for England, there to visit pottery, brick, and glass factories. Our incurably frolic imagination imagines just why Fred visited the brick factories before seeking out the glassworks.

We see by the papers that "the body of Wing Lock Wei, international tennis player who several times headed China's Davis Cup teams, former Shanghai banker, and son of the late Sir Bosham Wei, Chinese Ambassador to the Court of St. James, was recovered from the Hudson River off Gansevoort Street yesterday.

"Wei disappeared mysteriously at 10 o'clock Saturday night from the street in the vicinity of Bank Street and was not seen thereafter by friends with whom he had been attending a dinner party. There had been \$35 and a bill of lading in his pocket, both of which were missing.

"Wei had just signed a contract to give two nightly talks a week on Chinese customs over a National Broadcasting Company network on a children's program. He was born in Hongkong, a member of a wealthy family, and had relatives there and in Shanghai. He studied at Oxford and was graduated in 1916 from Hongkong University, of which his father was then director. He did post-graduate work at Union College and M.I.T. (with our Class). He later was director of the Oriental Bank, Shanghai. He represented China in the Far Eastern Olympics in 1915, 1921, and 1923, and headed the Davis Cup teams in 1924, 1927, and 1930."

May the notes for next month be dull, dreary, and sapless. — F. ALEXANDER MAGOUN, *Secretary*, Room 4-136, M.I.T., Cambridge, Mass. GRETCHEN A. PALMER, *Assistant Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

## 1920

It seems like pretty cold potatoes to be telling you now about our glorious Reunion which took place nearly half a year ago. However, I would like to rub it into those of you who didn't come that you missed one swell time and what was voted the most successful Reunion that the Class of 1920 has held to date. Norwich Inn turned out to be an ideal place for it and every one of the gratifying number that attended had only praise for the accommodations and the way the Reunion was run off by your committee. Following is a partial list of those who were present: Karl Bean, John Nash,

Scotty Wells, Pete Lavedan, Elbridge Wason, Chick Dana, Check Reed, George DesMarais, Perc Bugbee, Ned Murdough, Bob Patterson, Dick Gee, Buck Clark, Al Glassett, Ed McCarthy, Jack Coyle, Ray Davis, Jack McGivena, Ev Freeman, Bud Cofren, Vaughn Byron, Norrie Abbott, Freddy Britton, Ted Hobson, Homer Howes, Clement Hallinan, Ken Akers, Frank Hunt, Heinie Haskell, Buzz Burroughs, Hank Leigh.

Those who won the handsome prizes for the kickers' golf tournament were Elbridge Wason, Karl Bean as runner up, and Bob Patterson as third for the first day; Jim Gibson, Scotty Wells, and Norrie Abbott, in the order named, the second day. Homer Howes distinguished himself as the best long-distance hitter in the competition for that honor.

John Bartholomew is with the Eaton Manufacturing Company in Detroit. — M. E. Martinez is now manager of the largest nitrate plant in Chile, now known as the Pedro de Valdivia. — Fritz Boley has come back from South America and is in New Castle, Pa., 309 Rhodes Place. — Word has just reached us of the death of Edward Germain, Jr., of Course I nearly a year ago at Valparaiso, Chile. — Dolly Gray who has been an insurance tycoon in New York City was last heard from at Battle Mountain, Nev. Why, we don't know. — Grafton Owens is with the Ohio State University in the Chemistry Department.

Your Secretary has had the customary dearth of news for the summer and is making the customary, but by no means perfunctory, plea for support from "youse guys" to amplify and brighten up these notes. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

## 1921

There comes that occasion in our joyous recording of progress, success, and happy events when we pause in solemn deference as Time chronicles the passing of one of our family. Rudolf Robert Siegfried, son of the late Dr. and Mrs. J. P. Siegfried of Ashtabula, Ohio, died May 28, at the home of his father-in-law, 3518 Lake Avenue, Ashtabula. Despite his long illness it was only recently that his condition was known to be critical, and his loss comes as a decided shock to his many friends in our Class. He is survived by his wife, the former Mary Elizabeth Smith, to whom he was married June 29, 1929, a daughter, Mary Ann, and a sister, Mrs. Irene Siegfried Lewis.

Siegfried, who was familiarly known to us as Ashy, was born in Ashtabula on July 9, 1899. He received his early education in the local schools, graduating from the high school in 1917. He immediately entered the Institute and received his degree in Course XIII with our Class. His undergraduate activities included the Naval Architectural Society, the Aero Society, the Technology Athletic Club, and the Mandolin Club. During the War, he enlisted in the coast artillery.

Following graduation he was employed by the Silurium Company of Ashtabula and then became identified with Westing-

house Electric and Manufacturing Company in Pittsburgh. Leaving there in 1925, he went to Elyria, Ohio, to establish the bakelite-molding department of the General Industries Company. He was associated with this organization actively until last year when he was granted a leave of absence because of ill health. He and his family spent the last winter in Florida, returning to Ashtabula early in May.

Siegfried was a member of the Elyria Rotary Club and also of the First Presbyterian Church of Ashtabula. He was particularly well known in his community for his numerous accomplishments in the fields of photography and music. — On behalf of the Class, we extend sincerest sympathy to his dear ones. — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, South Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, 10 University Avenue, Chatham, N. J.

## 1922

So little time remained between the acceptance by the undersigned (in a moment of unaccountable weakness) of the job as Secretary and the dead line in *The Review* for this issue, that little could be done toward assembling a very newsy mass of material. However, knowing as we do the literary urge which has always been a fundamental weakness of the Class, we feel sure that, by the time of the next dead line, we shall be flooded with interesting communications from all corners of the earth. We have, however, been able to get together a few bits of information regarding class members which we give you herewith.

William A. Riley when last heard from was bound for Sweden, where he is to work on the construction of a large hospital in Stockholm. — Adolph B. Alland was married in June to Miss Ruth Florence Alpert of New York and Winthrop. The wedding trip was spent in Europe. Alland is now with I. B. Kleinert Rubber Company of New York.

After several years of service as assistant secretary of the New York Stock Exchange, Dean Worcester was promoted last June by the governors of the Exchange to the new post of Executive Vice-President. As such, he will be the number one administrative officer of the Stock Exchange. — Mrs. Owen Robert Parker of Minneapolis has announced the engagement of her daughter, Margaret, to Harold Aitken Bull. The *New York Times* of July 1 stated that the marriage was to take place in August. — Clark B. Carpenter, Professor of fuel engineering and metallurgy at the Colorado School of Mines, spent several weeks in the Physics Department at Technology during the past summer, taking courses dealing with an investigation of the spectroscopic possibilities in mining and metallurgy.

Our Class is honored in having members chosen as presidents of several of the alumni clubs: Samuel H. Reynolds of the Atlanta Association, Whitworth Ferguson of the Buffalo Association, Henry J.

1922 Continued

Horn, Jr., of the M.I.T. Club of Northern New Jersey, and Edwin A. Gruppe of the M.I.T. Club of the Mohawk Valley. The Secretary of the Technology Club of Norway is Claus M. Thellefsen. Heinie Horn played an important part in the promotion and organization of the M.I.T. Club of Northern New Jersey, which is one of the youngest and, in many respects, the most enthusiastic and flourishing of the many alumni clubs.

There are several 1922 honorary secretaries: William E. Huger for Atlanta, George O. Clifford for Evansville, Duncan R. Linsley for New York, Edwin A. Gruppe for Utica, H. W. McCurdy for Seattle, and Werner Schoop for Zurich, Switzerland. These honorary secretaries are appointed by President Compton to act as academic ambassadors of the Institute in their communities. Duncan Linsley has done a great deal of work in interesting and selecting prospects for Institute scholarships in the New York area.

There have been a number of address changes since the last issue of *The Review*. These are as follows: Alexander T. Barclay, 91 Franklin Street, Verona, N. J.; Henry S. Dimmick, 830 Homestead Road, Beechwood, Upper Darby, Pa.; Carroll S. Fisher, care of Pan American Airways, Communications Department, Brownsville, Texas; Ku C. Ku, Tientsin Pukow Railway Works, Ta Hui Shu Tsinan, Shantung, China; Myron K. Lingle, Department of Public Works, Division of Highways, Springfield, Ill.; Paul E. Lord, care of Wilson M. Powell, 71 Broadway, New York, N. Y.; Dr. Samuel H. Manian, 500 Riverside Drive, New York, N. Y.; Cornelius D. Sullivan, 4450 42d Street, San Diego, Calif. T. M. Taylor is now living in Oberlin, Ohio, and is working in Elyria, Ohio, where Matt is plant manager of the Colson Company. August Oddleifson is living in Rochester, N. Y. He is with Rothschild and Company, brokers, in the Lincoln-Alliance Building. Hugh Shirey is also in the brokerage business in Rochester with Tucker Anthony and Company. If any of you gentlemen come to Rochester, Hugh will gladly take you on for a game of golf and will, in all probability, give you a very bad beating. Ray Rundlett is with the Curtis Publishing Company at 60 East 42d Street, New York City. Frank Kurtz, after several years in South America, followed by a spell of commuting between Brazil, Colombia, and New York City, is now more or less settled in New York with the American Coffee Corporation, 420 Lexington Avenue. Frank has built himself a home in Bronxville. Ken Cunningham is another of the Rochester delegation. He is with the Eastman Kodak Company.

Almost as soon as you read this, the next issue of *The Review* will be going to press. Even if your life is flowing through only the usual well-ordered channels of the average American business existence, your friends of Institute days will be glad to hear from you again. Although our Class is one of the largest ever to leave

the Institute, news of the members in *The Review* has been very limited. In spite of this, the large attendance at both the five- and the ten-year reunions was proof of the interest and friendship that exists within the Class. Let us urge you to express these feelings by writing to your Secretary at least a short account of recent happenings. We need not tell you that a healthy column of 1922 notes will be appreciated by the entire Class. — C. KING CROFTON, *Secretary*, Rochester and Pittsburgh Coal Company, 604 Lincoln-Alliance Building, Rochester, N. Y.

## 1923

Helen Miller, V, is now Mrs. James A. McDonough. According to the *Boston Herald*, she was married on September 7 in St. Mary's Chapel, Boston College. Mrs. McDonough has been a member of the faculty of the Girls' Latin School. After the first of December the couple will receive friends at 50 Beacon Street, Chestnut Hill.

The *Women's Wear Daily* of August 23 carried the following story: "Closing an association of eight years as hosiery and underwear buyer of S. Kann Sons Company in Washington a week from tomorrow, Harry D. Wolfe (X) will leave the capital immediately thereafter for Madison, Wis., where he will enter upon research and marketing work at the University of Wisconsin. . . . Before joining Kann's, he made his first contact with the hosiery field when associated for six months with Real Silk Hosiery Mills. Then he went with Montgomery Ward and Company, where he remained for three years. His resignation from the capital store came about largely as the result of an automobile accident which occurred three years ago. While he recovered sufficiently to carry on his work, the injury to both his left leg and right side never permitted him to get about as actively as before. His decision to resign and engage in research work requiring less physical strain was made early in the year and is traced to that accident."

I have belated information regarding the birth of a daughter, Sandra Gordon, on April 9, to Mr. and Mrs. Stanley Hartshorn, IX-B, at Wayne, Pa.

The death of a prominent member of the Class is thus reported by the *Detroit Free Press* of May 20: "More than 1,000 members of the Detroit Arabian community attended memorial services Sunday afternoon at the Fort Wayne Hotel for Dr. Camille A. Sabah (VI), prominent engineer and one of the best known figures among the Arabians in America. He died recently in his home in Schenectady, N. Y. His body is to be removed to Lebanon, Arabia, for burial. Dr. Sabah was a specialist in television, holding many patents in that field. He was recently employed by the General Electric Company Laboratories."

I have received the following note from John Frank, IV: "Your card finds me still in Washington, where I have been working since last November as associate architect with the public works branch

of the Procurement Division. I have been fortunate in being assigned to work with two of the private consultants, Thomas Ellett and Eric Kebbon '12, instead of being ground through some of the more knobby and rigid cogs of the government mill. The work consists of designing post offices for towns, large and small, in all parts of the country, although some of the boys have been working on projects varied from mints to monkey houses for the Washington zoo. Rudy Blatter '22, Jimmy Bell '27, and Lloyd Westbrook '24 are here, among others. Although I find my present associates very congenial, I am on the lookout for a chance to return to New York. My wife has a job in White Plains, with the result that I can be said to be living in Washington, New York, White Plains, Greenwich, Conn., and on the Pennsylvania Railroad, where I have been spending every Saturday afternoon and Sunday night during the summer."

— HORATIO L. BOND, *Secretary*, 195 Elm Street, Braintree, Mass. JAMES A. PENNYPACKER, *Assistant Secretary*, Room 661, 11 Broadway, New York, N. Y.

## 1926

This month we gather about the was-sail bowl to drink to the health of John Bernard Wright, who was married on August 31 in Great Barrington to Beatrice Bennett McKee. John and his wife dwell in South Norwalk, Conn. (12 Fairfield Avenue), where he is sales engineer with the Nash Engineering Company, manufacturers of pumping equipment. "Mrs. Wright and I," writes John, "will be most happy to see any classmates who should happen to find themselves in the vicinity."

Eben Haskell has been appointed district power engineer of the New England Power Company for the district which has its headquarters in Lowell, Mass. — Bill Lowell, who reports having been called upon by Eben at the Hygrade Lamp Company in Salem, has recently acquired a house and all the trimmings in Newburyport, upon which he has spent his spare time this summer, refurbishing. — It is evidence, no doubt, of success when one's name is applied to a business. There is a Dewey F. Hand Machinery Company of Los Angeles, which represents Dewey Hand, one of the late Professor Miller's protégés.

It has taken three years for news to reach the Institute from Ohio of the death on June 14, 1932, of Robert A. Purcell. Purcell, who was a Course IX man, was with the Alliance Aircraft Corporation in Alliance, Ohio, and was killed in an airplane accident.

The *Boston Transcript* in September announced the appointment of Wilfred Carter to the position of director of the Hampton Institute Trade School, Virginia. Carter was formerly supervisor of the building construction curriculum of the college and assistant professor in charge of buildings and grounds. From 1926 to 1931 he was employed by the Housing Company of Boston, first as assistant job superintendent; next, in charge of construction research labora-



1926 Continued

tory; and, finally, as superintendent of construction, in charge of field operations.

By the time these notes appear again, there will be more definite information on our Tenth Reunion next June. Unless some of the '26 men are going in for politics and will be tied up with the various political conventions at that time, the reunion should prove the most important event of the season. — J. RHYNE KILLIAN, JR., *General Secretary*, Room 11-203, M.I.T., Cambridge, Mass.

## 1927

Carl Wies has written to tell us that he is now located in New London, Conn. His address is 58 Huntington Street. As has been reported previously, Carl took a course in medicine at Yale Medical School, after being graduated from the Institute. He was an interne at the New Haven Hospital and later became a research fellow and instructor on the staff at Yale. We cannot report that Carl has specialized in any particular branch of medicine. He states that Harold Knight is traveling in New England for a textile company, and on Knight's trips through New London they have an occasional get-together.

Harry Franks has written to report on the '27 festivities at the general reunion in early June. This account is brief and apparently to the point, because Harry says that he enjoyed himself very "swell" and records similar enjoyment by the others in the group.

The New York *Herald Tribune* carried the announcement of the marriage of Miss Rosaline Schladermundt to Roger Nowland in the chantry of St. Thomas' Church, New York City. We note particularly for those in New York that the Nowlands are living at 38 West 56th Street. Mrs. Nowland attended Sweet Briar College in Virginia and studied art in Paris. Nowland is with Norman Bel Geddes and Company. — We can also report the marriage of Miss Ruth Evelyn Dennison to Stuart Payzant on June 30 in Emmanuel Church, Boston. Mrs. Payzant is a graduate of Boston University and is a member of Theta Psi sorority. Sorry we have no information as to Stuart's occupation. — The third wedding for the summer took place on June 14 at Corpus Christi, Texas, at which time Miss Clara Theresa Robinson was married to Richard Davy. Davy is with the Southern Alkali Corporation at Corpus Christi.

Your Assistant Secretary can report that our noble President, James Adam Lyles, is in good spirits and health. Jim is still with the First Boston Corporation, where he is now holding the position of Assistant Vice-President.

We regret the need to inform you of the death of Otto Wallace Walter who was graduated as a Master of Science and Electrical Engineering. At the time of his death, Walter was Assistant Professor of Electrical Engineering in City College, New York. An automobile accident on July 9 in New York was the cause of his death. Our sincere sympathy is extended

to the widow and son who survive. — JOHN D. CRAWFORD, *General Secretary*, General Radio Company, 30 State Street, Cambridge, Mass. RAYMOND F. HIBBERT, *Assistant Secretary*, The Gill Corporation, 238 Main Street, Cambridge, Mass.

## 1930

Toy Town is history now! Those 43 loyal members of the Class who attended our Five-Year Reunion at the Toy Town Tavern, Winchendon, on June 1 and 2, will long remember the week-end, especially such high spots as Ted Riehl's supremacy in the aquatic contest and Lee Thorsen's gymnastic exploits. Long-distance honors were taken by Dick Chindblom of Evanston, Ill. More than half of the boys present were located outside of New England.

In the croquet tournament Hank Bates and Wallie Reed were victorious over Al Luery and Jay Ricks in a match that was every inch a struggle. The golf laurels were shared by Yicka Herbert and Parker Starratt, with George Lawson and Joe Rehler as the other semi-finalists.

The class banquet, Saturday evening, gave Jack Bennett another opportunity to prove himself an excellent toastmaster. Morell Marean's resignation from the position of Class Secretary-Treasurer was received with regret and his duties were placed upon the shoulders of the reunion committee chairman.

It has been suggested that the Class set aside the week-end prior to Alumni Day for an informal reunion at Toy Town Tavern, so that all those who want to get together again for a few days may do so. Comments on this suggestion will be very cheerfully accepted and it is hoped that enough men will be interested in the idea to make it a success. — Alumni Day this year was keenly enjoyed by a large number of the Class and 16 of us were grouped around the festive board for the Alumni Dinner and Pops Concert at Symphony Hall.

Course Secretaries are hereby urged to send in all news concerning members of the Class, while the coöperation of all classmates in this respect will do much to make our notes of genuine interest. — PARKER H. STARRATT, *General Secretary*, 75 Fenno Street, Wollaston, Mass.

## 1932

### COURSE I

Silence reigns from all members of our Course except Minot Bridgham. What's the matter with you fellows, anyway? Are all the various jobs in the Alumni Register correct? If not, please write and let us know what you're doing.

Minot is coming right along with Metropolitan Life. Salary and promotion depend on passing actuarial exams. This past winter he attended night school and passed three actuarial courses. Good for you, Minot! Besides, he got his M.S. in Civil Engineering from the Polytechnic Institute of Brooklyn, also via evening school. There's an ambitious man!

Lacking other material, I shall write about my affairs these past months. After three years of hard labor, I suc-

ceeded in getting my Doctor of Science degree. No, you needn't address me as Doctor. Having had seven years of M.I.T., I decided to change scenery for a while and attended the Concord Summer School of Music. Four solid weeks saturated with the finest of classical music — orchestra, singing, lectures, concerts — were certainly welcome after M.I.T. After that I went up to New Hampshire to do some surveying on a large estate. That was good fun. Now I am in Pittsburgh, having been here since Labor Day. I am working for a firm of consulting sanitary engineers named Chester, Laboon, Campbell, Davis, and Banksome. We are designing some water-purification plants and some sewerage systems. I am getting valuable experience in all phases of sanitary engineering and like my work very much. Consulting work is really fascinating.

One feature of Pittsburgh is its very active Technology Club. Every Friday noon we have lunch together. Last week Professor Spofford was our luncheon guest. He happened to be down here on some bridge consulting work. He toured Europe this summer, seeing all kinds of war preparations in Italy. If any of you come to Pittsburgh, don't fail to look up the Technology Club.

One bad habit these Pittsburghers have is that of saying that Carnegie Tech is the finest engineering school in the country. I'm having a hard time convincing these people that M.I.T. is far ahead of Carnegie.

Come on now, write soon and let us know what you're doing for a living. Please note my new address. — ROLF ELLASSEN, *Secretary*, 5920 Wellesley Avenue, Pittsburgh, Pa.

## 1933

Just a few social notes have come to my desk this month: Francis T. Hall, Jr., was married to Miss Florence Nelson on September 21. The following engagements have been announced: H. T. Martin to Miss Rachel Pettit; Robert White to Miss Wilma Golding. The marriage of Dr. Hugh Sims to Miss Helen Dorothea Parker took place on September 4.

My address is still the same as ever — let's hear from you. — GEORGE O. HENNING, JR., *General Secretary*, 163 Barbey Street, Brooklyn, N. Y. ROBERT M. KIMBALL, *Assistant Secretary*, Room 3-106, M.I.T., Cambridge, Mass.

### COURSE VI

To begin with, I want to apologize for the scarcity of news in this column in the past issues of *The Review*. I believe we all started out with plenty of gusto and determination, getting jobs, big salaries, and profits. Each was interested in what the other had, and so we contributed profusely the news of our jobs, whereabouts, and so on. Many of the boys who have been located in good positions and who have now obtained the first week's salary have somewhat slipped from their avowed duty. Their gusto subsided, determination slackened; they are losing hold and knowledge of their classmates. However,



1933 Continued

I believe it's only a temporary condition. I'm hoping they snap out of their slumber soon and contribute some interesting news to their classmates through this medium.

There are a few outstanding events that have occurred recently among our course members. The first exponent that comes to mind is Jim Merrill. Jim is married to a lovely girl from the home town. They are now living in a swanky New York apartment near Riverside Drive. Her name is Marge. Some of you might have met her at the Senior Prom. Marge is apparently a good cook. I suggest you come up and see her some time. Besides the matrimonial obligations, Jim has also bought a car. Testing engineer is Jim's title, employed by New York Edison.

Now we skip to a gentleman we all respect for his profound knowledge, a wizard and master of engineering. I'm told this gentleman hit the five-point rating one term. After receiving the glad news, he quietly returned to his violin. I'm sure you have already guessed the man, Dill Collins. Dill has a new job with the Carlton Lamp Company, Palisades, N. J., as a research engineer. The company manufactures automobile lamps, and Dill is building up a laboratory for research. He is the right man for the right job. — Word comes indirectly from Bruce Ennis, who is, or was, at New Mexico University studying Spanish, for what reason or motive I do not know. Bruce has refused a few jobs because of their not being strictly engineering.

I'm told that Bob McCormack, the cow puncher from Rochester, is having a difficult time with his employer. He seems to have forgotten much of what he has learned and the finer virtues we have tried to bestow upon him. Bob has to use the night lamp to keep up with his work. Here is where his nimble, dancing feet, his ultra-fancy steps, and knee action are of little importance to him. Best of luck to you, Bob; we wonder how many more fancy steps you will make in the development of vacuum tubes. A reply through this medium will be accepted.

Al Payne is enjoying his job with a high-class printing-press manufacturer in Westerly, R. I. He attributes his gradual promotions to his being a Tech man, as he is moving upward much faster than others in his plant. — Saw John Clark a few weeks ago when he visited the city in his new Ford. John is just as happy and care free as ever, not a worry in his skull. A couple of pints for himself and a few gallons for the Ford, and he's off for a happy week-end — a visit to his red-headed girl friend. John is working for Harbshaw Cable Company, Yonkers, N. Y., minus two fingers. As for myself, I'm still and primarily manufacturing sign-flashing equipment. I have been told that about 90% of the new businesses fail in the first year. I'm at the end of my second, and so I still have a chance to survive the pitfalls of business.

To those who have been holding the round-robin letter longer than they should, please send it along more promptly to the next man on the list. Don't forget there are others who are interested.

Work hard and long; in time you will become boss, when you will work harder and longer. With best wishes. — EDWARD S. GOODRIDGE, *Secretary*, 791 Broadway, New York, N. Y.

## COURSE VI-A

Gordon Brown '31 was married about a month ago to an East Orange, N. J., girl; I left the announcement down home, so I don't remember her name. — Dick Fossett was married on Sunday, June 9, to Miss Charalee Mizell at Heavener, Okla. — Ben Hiatt is happily married, as recorded about a year ago, and working for the Eastman Kodak Company in Rochester. I dropped up to see him one evening about a month ago and met his wife. — T. Johnson has completed the "A" course at General Electric and is about to embark upon the still more advanced work of the "B" course, the second year of a three-year, advanced study course available to specially qualified and able young General Electric technical men. — JOHN F. LONGLEY, *Secretary*, Y.M.C.A., Ithaca, N. Y.

## COURSE XVII

Pretty good, pretty good! News from five coursemates in a single month! Jim is still real-estating in Boston; the Colonel is selling lumber and millwork in Cambridge; Tom has been on CCC duty and is back with a civil engineer; Don Neil got a promotion and is still with the CQM at New York; Ed Rowell is surveying utility property in Newark; Crane (at last report) is at a CCC Camp in Vermont as an officer; I'm still working away in Carolina. Very faintly I learn that Sully is working in Cambridge; and Cotton must be lost in the wilds of Missouri.

But, sure enough, there really were some letters. Don writes that he was married on June 7 and he and his lady went for a trip to Bermuda. Arriving in New York on July 25 he went immediately to Washington and then returned to the grind in the big city on the first of August. Most of the large work in the New York area under the direction of the Construction Quartermaster has been wound up, and he was picking up the loose ends at the time of writing. There is more good news from Neil, though. On the day he went back to work he received notice of a promotion to 1st Lieutenant. Congratulations, Don! We're all glad to see you get it, and we're hoping that captaincy isn't quite so far as you may think. (Don was acting Construction Quartermaster for metropolitan New York for a while in August. Hope he gets it permanently soon.)

Norcross sends back the postal and asks what he is supposed to write about. He's working as hard as ever at Whittier's in Boston, living a happy married life, and expects to return for third year of law school this winter.

The Colonel, the good old Colonel, crashes through with a letter in which he informs the waiting world that he hasn't a thing to say, hasn't heard or seen anything of any of the fellows recently, and has seen Sully once on the fly in Central

Square subway station. Remodeling jobs take most of the Colonel's time, and he surely did figure them before he finally got that vacation in August. Fourteen estimates in one week, and only one of them developed! Such is life, old boy; you ought to see the reams of paper we use without coming closer than second. And that vacation sounds nice, too. Journeying afar, afoot and acar, the Colonel spent a week camping, driving hither and thither, and eating wieners, fish broiled over an open fire, and "barrels" (quotes are the Colonel's) of steamed clams. To end it all, he promises more when a propitious moment arrives.

As for Galvin, he's had a busy summer. After finishing that retaining wall along the river last April, he stayed with the City Engineer of Haverhill for a month and then cast his lot with the CCC when some of the reserve officers had a chance to go on duty. Five weeks at Fort Devens and a couple of months at the Otter River (you guess where that is) State Forest Camp, Mass., wound that up. August 1 marked the change when the funds ran low and 80 officers in New England were dropped. Our Tom's sort of lucky that way; after being out only a week, he had a job with a civil engineer and has been busy ever since. Surveying has taken most of the time, a good portion of it being land-court work requiring high accuracy. Tom reports that he has come through all right and keeps hoping.

It's from Galvin that we hear about Crane. The two of them went on active duty with the CCC at the same time, but Bob went off into Vermont and hasn't been heard of since. Rumor has it that he is in the vicinity of Montpelier. Sully, too, gets mention in Tom's letter: Gene's working with James P. Mozzicato in Medford, supervising construction and doing design work. Already he has had two structural designs accepted by the Boston Building Inspector and the buildings are under construction — looks like Sully's going places. (Aside to Tom — that's not nice, wishing me things like that!)

Ed Rowell expected to be transferred to Michigan about the first of October for six months or longer, but beyond that he doesn't guess. For a good part of the summer he was in Newark making a survey of the physical plant of some utility, work similar to that he did in Philly last winter, so far as I can gather. Late in July he went on one of the Class of '33 trips when the gang from around New York went fishing near Babylon — naw, not the zikkurat town — Long Island, and was the only Course XVII man present, which isn't exactly surprising as Don was away at the time.

That's about the crop — there hasn't been a thing from Coop. I'm still working along; the first job I looked after by myself made a little money. Some of our other work hasn't done so well; some has done even better. The new PWA has us all worried just a bit, but private work seems to be picking up and we're getting some, though every contractor in two states is after it. If all goes well, I'll see the Boston boys sometime this fall. —

1933 Continued

BEAUMERT H. WHITTON, *Secretary*, Southeastern Construction Company, Box 1491, Charlotte, N. C.

## 1934

It has been a long time since I wrote my last letter to *The Review*, a little over five months, to be exact, and in that time I have received several dozen letters that have made me a bit envious of the good times all of you are enjoying. However, after I get through reporting some of these, I shall try to point out that good times may also be had in Bolivia.

The first letter on my list came from Brad Ellenwood, and was dated way back in April. Brad says that Bert Summers is happy on the job in California, where he is working for the San Francisco Contractors, mapping out and building fish wharves, timber warehouses, earth-fill dams, and pipe lines. Bert has become a member of the M.I.T. Club of Northern California, which he claims to be a very lively organization. Vin Rother, whom Brad speaks of as "that loyal subject of King George," spent last fall in England. Scott Dickson (Lieutenant to you) was married to a Miss Ann Sullens, of Jackson, Miss., sometime in May, and although the Lieutenant raves on about his very lovely blond, he is slightly worried about her cooking. Sam Joroff, Brad writes, is still hunting (no, you sap, for a job), while Bob (M) Becker is still working for Professor Voss, but at the Thompson-Lickner Company, where he was doing research. As for Brad himself, at the time he wrote, he was with his father doing a medium-sized remodeling and renovating job, just large enough so that the NRA wanted a tenth of a per cent "registration fee," *i.e.*, tax. Jack Platt is part and parcel of the Platt Construction Company, doing all sorts of things except making a profit. Andy Andresen works on and off with his dad and attends the Architectural Society of Boston. — Joe Fishman is still sorting shoes and selling mail, or is it the other way around? — Oney O'Brien, besides working at Wellesley for Professor Voss, was playing basketball for the Jordan Marsh Company.

My news from Ralph Geil is rather old, due to the fact that two months are required for letters that either of us writes. By this time you all know that Ralph sailed for Malay last February aboard the S.S. *Hokusan Maru*. He arrived at Singapore on March 20, and was upcountry the following day. In his last letter he told me something of the work he is doing: He is in charge of the engineering office, which has in its employ two surveyors, two draftsmen, and a flock of coolies who are called in to do the dirty work; he is working on a river-deviation project (the work of the company is tin dredging, and it owns four dredges that are operating over an area of some 10,000 square miles). Days when the thermometer does not reach 92° Fahrenheit are unusual for Malay, but Ralph says that for three dollars per month one can get a laundryman to do all one's clothes (and that means a lot, as clothes are changed completely three times daily).

Some of you have heard of the misfortune that came to Dick Bell, but for those who have not, I shall simply say that Dick was hurt on the job, infection set in, all of which resulted in the loss of the calf of his right leg. Dick certainly has a lot of pluck and courage, and it showed in the way he pulled through this. However, everything seems to have turned out for the best, because on Saturday, August 10, Mrs. Lovey Loeffler Brown announced the marriage of her daughter, Celeste, to Mr. Richard Bell. All of which urges me to say, "Congratulations and everythin'!"

As long as I got started on all those bright boys of Course III, I might as well continue by quoting from the letters I have received from Professor Locke '96. He writes that only one man has not been placed as yet, and goes on to say that Milliken and Stratton, both of whom took their Masters' degrees last June, are working: Frank, in a flotation plant in Arizona; Carl, for the American Smelting and Refining Company in Montana. — Brad Hooper is working in the Heat Lab at school and Ed Locke is still in charge of a CCC camp. Kevvy Malone, so his boss reports, is doing well in California, while Bill Wessel, after playing counterman in a New York restaurant for some time, decided to take Horace Greeley's advice again, and headed west toward Arizona and a job. — Phil Goodwin has reported that he is happy on his job in Delaware and that the officials treat their men satisfactorily.

The prize news comes from Johnny Alder, whose letter reads: "Here I am in Alaska at last. I am working in the old town of Tofty, near Hot Springs. Tofty is a ghost town at present, but flourished about 1915. The camp is a placer, open cut, with about six feet of gravel under about 50 feet of frozen mud. The mud we sluice off with hydraulic giants as fast as it thaws. The nozzles are from two to three inches in diameter, depending on the water available, and work under a head of about 50 feet. We are having lots of rain, so the four giants are going steadily and moving considerable mud. So far I have been laboring and running a giant, but there is considerable to learn. There is a Diesel shovel and drag line on the property being assembled. Diesel power is quite popular in this country." — The July issue of the *Arizona Mining Journal* stated that there was a strike on at Oatman, Ariz., so that it appears that Bob McIver, whose workings are located in that town, might be having his troubles.

Tuffy Emery writes that shortly after a farewell dinner a gang of us had before I sailed, he decided to leave the protecting wing of Macy's. Tuffy is now with the Barney-Ahlers Construction Corporation, and says he is reveling in the real life of a civil engineer in the field — old clothes, a pipe in his mouth, and a swell bunch to work with. At present he is building an alcohol factory — more fun! Tuffy recounts in his letter a dinner party that he gave in his apartment and from which the whole gang later adjourned to the German-American A. C. in New York, where wassail reigned till early morn. Among

those present were Ash Woodhall (remember the little bum?), Charlie Lucke, Al Rogowski, Johnny Moomaw, Gordon Way, Milt Brooks, Larry Stein, Duncan Emery (Tuffy's kid brother), and, of course, Tuffy. Ash entered New York University's Course XV after he left Tech, and was graduated from there last June. Charlie, after getting his degree from Tech, has gone to work for the Rockwell Hardness Testing Machine people. Al Rogowski, after bragging for months about all the big shots that have interviewed him, finally landed himself a good job. He has been engaged to survey all the leading race tracks and to make sure that the horses are running the allotted distances. Al is the chief-of-party, and after his long idleness, is now hiring men to work under him. Johnny Moomaw is research man for the Krebs Paint and Pigment Company of Newark. He is doing very well, has gotten a raise (a substantial one, so I am told), and so impressed are the boys at the plant with his M.I.T. wisdom, that they call him Doc.

Milt Brooks, whom a good many of our Class know well, has left the Federal Shipbuilding Company and now has a job at the Navy Yard in Brooklyn as a designer. Milt is planning to take up some night courses at Brooklyn Polytech, so that he can go back and finish up at Tech in a few years. Larry Stein, from whom I have had a few individual reports, is working for the Consolidated Gas Company at the plant of one of its subsidiaries in Astoria. (If you have never heard of the place, let me say that I was born there; no, not down by the gas works. It is all New York City, just the same.) Larry is doing routine inventory, checking up on all the gas mains throughout the city. This whole gang has been taking in all the spring races of the Tech crews, and the latest report that I have (from three of them, Larry, Tuffy, and Milt, all at the same time) is that they spent a week-end in sailing a catboat all around Gardiner's Bay on Long Island. It seems that the two shrimps of the party, which included Charlie, Milt, Tuffy, and Larry, were sent to buy food while the other two got the boat. According to Milt's version: "When it came time to eat, we found the little heels had bought only enough food to satisfy their feeble appetites, so that we didn't have half enough to eat. We had to eat ice cream for breakfast and lunch, as that is all that could be purchased on Sunday."

Herb Lidoff has written to say that he is still at the Government's "burial ground for ambition," namely the Navy Yard in Washington, and is threatening to take up patent law next, inasmuch as he feels that he is through with chemistry for all time. Apparently Herb's *Aristotle III* is still in good running order, because Herb mentioned that he saw 50,000 miles turn up on the speedometer recently. "More fun," says he, "and does the gas burn up!"

Other news that has come to me through one source or another: Al Mowatt spent the summer with an orchestra, sailing the Atlantic on one of the big lin-



1934 Continued

ers. By this time, he is working on a sugar plantation in Jamaica in the West Indies. — Ed Loewenstein was taking care of some kids during the summer, and at the same time remodeling houses. — Sid Nashner, although he spent the summer working for the Underwood Typewriter people, expected to go back to Tech, where it was rumored that he would be given the job of Freshman Crew Coach. — Bob Roulston had some bad luck when he lost his job. He is now rooming with Walt Wrigley and Chuck Jerome. — Bill Buttmi is working for General Electric. He and Tuffy Emery are both shave-tail 2nd "Looseys" in the 302nd Combat Engineers. — Frank Nicoli resigned from his job with the Coast and Geodetic Survey after tramping some 3,000 miles with a leveling party (sore feet, I am told) and, after hanging around long enough to get some of the boys interested in his tales about 32-ounce glasses of beer for a nickel in Milwaukee, he ran off and got himself a job as a sanitary engineer in good old Massachusetts. — Moose Brown, with his Master's degree in his hand, landed in Pittsburgh and into a fine job at the Mellon Institute. — Ed Chiswell, also equipped with a graduate degree, was reported to have landed a job in California.

I, for one, did not heed the advice that Horace Greeley once gave to the youth of America, and on board the ship that carried me south, through the Panama Canal, and into the broad, blue expanse of the Pacific, I was not at all dissatisfied with my decision. Nor am I now, after having spent more than four months in a country that can appear to the outsider only as a bare, rough, and isolated region on the face of the earth. To me, it is beautiful, far more rich in color than the cities at home, and full of customs whose origins can be traced beyond that new birth of America when it was first settled by the whites.

Let me explain: It was while the train that carried me from the sea up into the Andes was slowly lumbering up that stiff grade to the frontier between Chile and Bolivia, that I caught my first glimpse of those jagged peaks that seem to jut out and up to the heavens as far as the eye can reach, with nothing on their summits but pure, white snow. Here were mountains that had never been painted in the travel pamphlets, as have been those of almost every other country of the world, and yet they were as striking as any I have ever seen. It was like finding something new and different; it made me think that I had discovered them, even though I knew that they had been standing there from time immemorial, looked upon by people who had lived there almost forever. When night came, there was nothing I could do but take to my bunk and try to think what I would see on the morrow. Nor was I disappointed, for when I awoke and found I had to break the ice on the surface of the water in the pitcher in order to wash, I realized that our car had been switched onto a siding, and that we were in Uyuni, the terminus of my trip. Then I looked out, and what should greet my eyes but country as flat as the

sea and as white and glistening as salt. It reached out for miles to the north and south and only to the east and west could I see the faint outlines of mountain ranges with their snow-capped peaks. As it happened, this flat sea was really salt (the bed of what was once a great salt lake) and forms what is called the *alti-plano* of Bolivia, level, and reaching from one end of the country to the other. But it was cold in the early morning, and when I finally left the train in order to find where I was to go and what I was to do, I was surprised to find that ice had formed wherever any water had spilled.

An hour or so later, I was on my way over the last stage of my trip to Pulacayo, my new home for three years, and I found myself driving in a large car over a perfectly good road across this great *alti-plano* toward the east, where a range of mountains was rapidly looming closer and closer, as if to block off our approach. What seemed an impenetrable wall at first, however, suddenly opened into wonderful passes and cuts, through which we glided, up which we climbed, and down which we slid, into Pulacayo. On these hills was much cactus and what is known here as *tola*, a shrub that grows in this dry country and is used as a fuel.

There before me, sunk down in a small valley surrounded on three sides by hills that seemed to protect it from outside interference, was the settlement. On the fourth side, toward the south, a small black stream was winding its way down to the *alti-plano*, carrying with it thousands of dollars in recovery losses from the mill, below which it ran. This was Pulacayo, and right from the start I was so highly excited that I wanted to learn all about it immediately; but the study of a language, of the customs of a people, of the history surrounding a place, takes time — more time than I have spent here. Yet, I shall try to tell of some of the things I already know. The natives are largely Indians coming from several tribes for miles around. They speak no Spanish but a language called *Kechur*. Each tribe has its own variations and some even have an entirely separate and distinct language. Their dress distinguishes them more than their speech, as do their hair-dress and facial appearance. One tribe wears hats of green velvet with flat brims. Another wears small-brimmed hats of felt. One tribe wears pants that are above the knee in length and very tight-fitting, while another wears pants of a loose-fitting, below-the-knee type, beyond which extends, for an inch or two, under-pants of finely embroidered cotton. And so it goes.

They are superstitious, these simple people. No woman may enter the mine, because it means death to a man working in it. It happened, many years ago, that the manager took three visitors and their wives on a tour of the mine. The following day three men were killed in a rock fall, and it was all the officials could do to prevent a riot. The day of San Juan comes at the beginning of the winter season, during the middle of June. On the eve of that day, everyone must light a

bonfire before his house in order to keep the cold away. Failure to do so insures a cold winter. (However, the past winter, just ended, was mild, with only one snowfall and three other cloudy days.) San Roque is the dogs' saint, and on his day each dog is decorated from head to foot with small paper ribbons and such. The recent eclipse of the moon was an occurrence that sent many into hysterics as they feared the end of the world because the moon suddenly had a piece cut out of it when there was no apparent reason for its unusual behavior. These natives, unlike our people, are not of the belief that cleanliness is next to godliness, and soap and water are their worst enemies. Luckily, they carry no odor, but nevertheless their everlasting filth is a cause for great disgust until one reaches the stage of not noticing it. Washing too often, so they claim, is apt to cause sickness resulting in death.

And yet these same people are surprisingly honest. One need not be afraid to leave valuables exposed. The Indians do not steal. In this respect they are entirely different from their fellow countrymen, who can be grouped into two classes, the *cholo*, a mixture of Indian and white blood, and the *gente decente*, who are white or of a dark complexion. This latter class makes up the aristocracy of an otherwise republican Bolivia. This is the class of merchants and politicians, and it looks down upon the Indian. Class distinction here is more noticeable than it is at home between our whites and negroes.

I hope to be able to write down some of my impressions of this fascinating country each month, this being the first of the series, but in the meantime I want also to be able to report to you the doings of our fellow classmates. In order to do that, I must have coöperation. Please drop me a line, if only to say where you are, what you are doing, and how you like what you are doing. So, until December, *hasta luego*. — ROBERT C. BECKER, General Secretary, Compania Huanchaca de Bolivia, Pulacayo, Bolivia, S. A. HOYT P. STEELE, Assistant Secretary, 27 Beechwood Street, Quincy, Mass.

## 1935

All aboard for a fast ride about these glorious United States, stopping at the homes and workshops of many friends. Already two of the gang have broken into print in a big way. Paul Cohen was the first when the New Bedford *Standard* complimented him for his recent article in this fine alumni magazine of ours. The article took the best part of two columns, and included a good picture of Paul. The following are the headlines of the article: "M.I.T. Graduate Contributes to Science Review. Paul Cohen's Capability is Recognized by 'Tech' Publication. Is Talented Writer. Has Gift for Being Able to Make Technical Subjects Clear to Readers." They sure hit the nail on the head that time. The following are quotations from the article: "The honor of being the first undergraduate ever to contribute to the Technology Review, scientific and alumni magazine published



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at the M.I.T., belongs to Paul Cohen of 972 County Street, who received his degree at M.I.T. this month. . . .

"An inquiring as well as brilliant mind is Cohen's. The editorial column he conducted last year, as editor of the student newspaper at Technology, bore witness to that. Many an hour of research for which he received no classroom credit went into his paragraphs, which touched upon scientific aspects of current news, as well as the more usual items of local student interest. They compared favorably with editorials in metropolitan newspapers, faculty members commented."

The second of our brethren to make the headlines is Gene Nohl. The *Boston Post* and the *Boston Globe* each had an article about his salvage operations off the coast of Vineyard Haven. The first of the articles, from the *Post* is quoted in part: "The mystery behind the sinking of the rumrunner, *John Dwight*, which has plagued this section for more than a decade, was partially solved today when two divers went down to the wreck and found much of the vessel undamaged. — There was reason to believe that the valuable cargo of Canadian liquors was aboard the sunken rumrunner and that the two divers promoting the salvaging may wring from the Atlantic a fortune in excess of \$225,000 for themselves. — Eugene Nohl, 24-year-old Technology graduate, and David Curney, local diver, each went down today to the side of the rumrunner, resting on the bottom of the Atlantic in 108 feet of water, between Gay Head and Cuttyhunk. . . ."

The following is a paragraph quoted from the article in the *Globe*: "Captain Eugene Nohl of M.I.T. now holds the government salvage rights and is expected to make a survey to ascertain whether or not there is anything of value to be salvaged." We all join in wishing the best of success to these "headliners."

I had an interesting note from Phil Johnston a short time ago. He writes that he is working for Carrier Engineering Corporation doing air conditioning. He said that he would be located in New York City until October 1. "I've been drafted for three months into the field service. It means going out on difficult jobs every few days. So far, I haven't done the same thing two days in a row. In the morning it may be a storage warehouse at zero degrees and in the afternoon working in a blanket dryer for the Pullman Company at 140°. After October 1 I spend two months in the research lab, two months in the engineering, and then I go to the company school for three months. The school idea is lousy." Evidently Phil is fed up on the school stuff. At any rate he does not have to worry about the weather, for by going to the right places he can get any temperature he desires. I hope Phil realizes how lucky he is to be kept busy, even in a "lousy" school. Down here on the Cape Cod Canal we have so little to do that we have to hide in the woods so that the officials will not see us loafing and raise a rumpus about it. If it were not for the many odd jobs I have to do about the house, and the

endless writing of letters in connection with this secretarial job, I think I would go nuts from having nothing to do but draw a pay check every two weeks.

Guy Talbourdet is another of our fortunates with a job of real interest. He writes that he is connected with the experimental department of the United Shoe Machinery Corporation at Beverly. His duties consist mainly of general engineering work, design of gears and gear drives. He writes: "Furthermore, and with the precious coöperation of Professor Earle Buckingham of the Institute, I am doing research work on the surface fatigue of materials."

Frank Sellow had a thing or two to say about a few of our budding architects. George Hatch is working for the National Park Service in Montpelier, Vt., and is designing swimming pools and recreation centers which the CCC boys construct. One of the projects is a ski shelter for Mount Mansfield, and another is a diving float for a lake at Montpelier. George Lykos is working for an architect in Wilmington, Del. He expects to return to school this fall for graduate work.

Biss Alderman holds the record so far, having had three jobs since graduation. Just now he is working for the lighting department of the Metropolitan Edison Company in Reading, Penn. He is designing luminous stove fronts and home and industrial lighting layouts. Jack McKeon is in Connecticut as this report goes in. He has been admitted to the Air Corps of the Naval Reserve and starts training this fall at Squantum.

I've had a few letters from the chemists. Ben Blocker, it seems, has not been so fortunate as some of the rest of us. He is still one of the great army of the unemployed, but has a few prospects. Perhaps by the time you fellows read this, he will have landed one of those elusive jobs after the interviews he had planned in New York City. The best of luck to you, Ben! Tony Dauphiné had quite a bit to say in his letter: "At present it seems that most of the Course is in the Practice School of Standard Oil of California, in Los Angeles, or else returning for graduate work; Course X seems to be here in a body. The fellows who are now at the Bangor Station are: Reid Ewing, Louis Garono, John Demo, Fred Draemel, Art Crowley, George Akin, Lieutenant Creasy, Tzeng Suen, Ben Woodruff, Bill Stevenson, Ed Nicholson, and John Roberts. Among the men in the other two stations are: John Howell, Henry Ogorzaly, Warren Sundstrom, Stephen Perry, Charley Smith, Will Bixby, Fred Kraus, and Roy Whitney. Bill Barker and Wilson are out in California working for Union Oil Company. Lars Sjodahl is in Cincinnati, employed by the Standard Printing Ink Company."

"Tom Taylor was my roommate in California this summer, being employed also at Standard's refinery. He is still there, and is returning for his Doctor's, with Charlie Reed and Ed Chiswell, who have been working for Standard Oil also, in the San Francisco Refinery. Working out there was a real education, besides

being very enjoyable." These chemists seem to get all the breaks on the jobs. "Oh I wish I were Aladdin," for I would change my degree to one in Chem Engineering. Thanks a lot, Tony, for the dope. Perhaps the other Courses will begin to see the light soon.

Bill Howell writes that he is working in the radio department of the General Electric in Schenectady and is amusing himself considering the antics of George Knapp. George, it seems, is located in Sidney, N. Y., with the Scintilla Magneto Company. As many will remember, George had a hobby which consisted of experimenting with records. Recently he has taken to amusing several Purdue fellows in his boarding house by playing a recording of Shubert's "Unfinished Symphony," nightly. Bill seems to know his George, for he writes about him: "George tells me that lately during the lull of one of those small-town Sunday evenings he was called to the phone, only to hear a feminine voice asking what he was doing that night. (Comment: the old devil.) George was rather impressed but could only contrive arrangements which necessitated his walking all over town shouting, until he got to the right house. After practically convincing the town he was batty, the right house was reached. Here he found three of his friends and four opposite charges. (Note: I wonder what the voltage was.) A pleasant time was had by all; but that's not the end. When George returned home he found a bat flying around the room and, by now, has succeeded in taming it, probably in symbolic memory of that night."

Next we have a bit of news about John Kohr. Johnny is down in Tampa working for the Celo Company of America, the work being mainly of either a chemical or bacteriological nature. The Celo Company manufactures many soda-water drinks, that is, the flavors, for local consumption. The concentrates are shipped throughout the States of Florida and Georgia. Celo is the name of a drink manufactured by the company and the only one they manufactured when it was first organized. Johnny is working under Laurence Geer '15, S.M. '34. Johnny seems to be enjoying his work there and no doubt is pleased to work under a Tech grad.

We have a meagre bit of information about Bill Barker. An article in the *Boston Globe* states that he has left for San Francisco, Calif., to work in a chemical plant. Let's have a letter about the job sometime, Bill.

Art Linn crashed through with a note a short time ago. He is still chasing that will-o'-the-wisp, a job. During July he was at O.R.C. Camp at Fisher's Island, as was Ernie Van Ham. Ernie, it seems, is quite a marksman, for Art writes the following: "Between you and me, I think he must be a gunman, for it does not seem possible that a man could shoot so well with a .45 and still be amongst those who do an honest day's work. As for me, I just about qualify for the ammunition detail."

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Carson Brooks is another on our growing list of happily employed. Carse is working in the electrolytic department of the Hooker Electrochemical Company, Niagara Falls. The department includes the making of brine for cells, electrolysis of the brine into caustic soda, choline, and hydrogen, a plant for the liquefaction of the chlorine, and a plant for the manufacture of sulphur chloride. At the end of three weeks, Carse was placed under one of the plant engineers to work on some of the technical problems. He reports that he has had plenty of opportunity to use all that he learned in school and that he enjoys the work. He is working at present on a method for determining the amount of water vapor in the chlorine, in order to determine the effectiveness of the drying system. Incidentally, he mentioned that Les Brooks is working for the same company as a cell attendant. Across the street, Tom Keeling is working for the Niagara Alkali Company. At present he is taking a training course preparatory to going into their sales department.

Jack Loomis is working in Rockland, Mass., for the F. L. and J. C. Codman Company, manufacturers of buffing and polishing wheels. Jack is setting piece rates and taking time studies. Incidentally, here is your proof of the fact that it is a good idea to do a thesis in connection with some manufacturer, for this is the company where Dick Bailey and Jack gathered information for their theses. Unfortunately, Jack expects the work to be only temporary. However, sometimes these temporary jobs turn into permanent ones. Let's hope this one will. Jack's only complaint is that it seems tough to spend the usual three-month vacation working.

Ohio is the scene of action for El Roth, who is working for Procter and Gamble Company. El is at present being trained

in all phases of industrial engineering. I gather that El spends most of his spare time planning his week-ends. A short time ago he spent a week-end hunting in the Kentucky Hills and bagged seven squirrels. He has struck up an acquaintance with another grad, Ed Nowell '34. Barney Freiberg stopped in to see him, but we can only guess where Barney was headed.

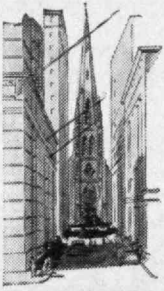
A traveler, me lads, a traveler is Fred Lincoln. Fred is officially listed as a sales apprentice by the General Chemical Company of New York. He is in the midst of a training period and is being sent to various cities for short stops. His letter was written from Wilmington, Del., where he expects to be for a couple of months. His only regret is that he is "going to miss good old Tech a hell of a lot — and the girl I left in Cambridge." Which one, Fred? Fred tells me that Bob Scribner is all set to enter Harvard Medical and that Winnie Winiarski is working for the Government in Elmira, N. Y. Who would ever believe that Bob would turn "Haavaad pansy" on us, but then the Medical School does not hold a candle to the rest of the university for the development of those traits. I guess Scribby will weather the storm and come out still a darn good egg. Now we come to the most interesting part of Fred's letter: "Some of the boys are planning a send-off for Stocky in New York, the 25th of September, and I hope to be among those present." I am going to try and get down that way and report the big time; at any rate, I'll do my best to get an account of it. We all join in wishing Stocky even greater success abroad than he won at Tech.

I'll have to close now with a bit of dope about the gang here on the Canal. As I mentioned in the last edition, there are four of the Class of '35 here working

for the Government. They are Larry Hall, Bob Greer, Jack Miller, and myself. We have been working on survey parties, as laborers, preparing for the widening of the Cape Cod Canal. A short time ago Jack was assigned to inspect the building of a new office for the field parties, but the high-mucky-mucks got wind of it and put on the clamps. It seems that a laborer can not, according to rules and regulations, do any classified work. In short, a laborer can only cut brush. The result is that for a time, at any rate, the whole gang of us have been forced to become "dumb." (Not that we never were before, but comparatively speaking.) Try and imagine an organization which actually raises a row about paying a man a laborer's wage and having him do the work of a higher-paid man. They ought to consider themselves lucky to get a group of more or less intelligent fellows to work for the pay of grammar-school graduates. There is a Brown grad here who is in the same boat with us. Tech is well represented here for, in addition to those mentioned above, there are Roger Williams '34 and Bill Murphy '33. Both are officially handy men; in fact, the Government pays them for being handy men. Gentlemen, I implore you, if you desire to keep your sanity intact, don't work for the U. S. Army Engineers.

The information reported above represents but a small proportion of the Class. Let's hear from the rest of you in the near future. If you like to hear how your friends are making out, remember that there are many more who would like to have word about you. Drop me a line soon in Sagamore, Mass. Incidentally, I won't object strenuously to receiving a telegram in case you have forgotten how to write a letter. — ROBERT J. GRANBERG, General Secretary, 9 Old Town Road, Wellesley Farms, Mass.





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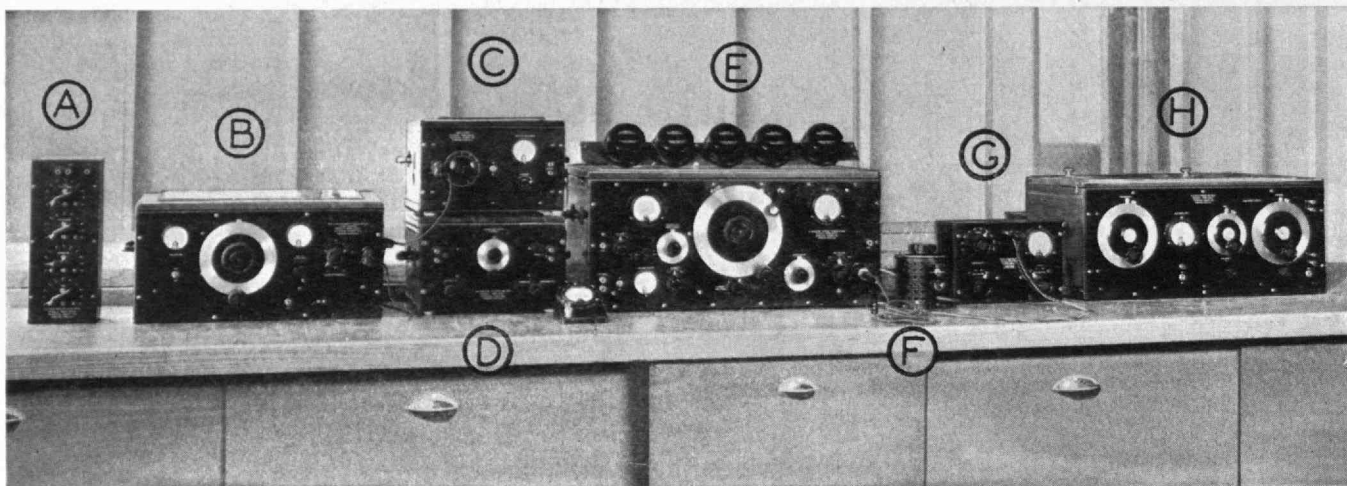
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